

3.0 Affected Environment and Environmental Consequences

3.1 Scope of Analysis

The Affected Environment and Environmental Consequences section of the EA describes the existing conditions in the project area and discloses the environmental consequences of the proposed project and alternatives. This section is organized by resource topics. Each resource section describes the affected environment pertinent to the topic and the potential impacts of the proposed project and alternatives, including the No Action Alternative. The resource sections also address the standard construction practices and mitigation practices that Western would implement to ensure that all impacts are less than significant. Compliance with federal environmental regulations and Executive Orders are discussed in the various sections, as well.

3.1.1 Resource Issues and Project Areas Considered

The environmental issues considered in this EA include those resources that would be impacted by the project to some degree. These include Climate and Air Quality (Section 3.2), Geology, Soils, and Paleontology (Section 3.3), Water Resources (Section 3.4), Floodplains and Wetlands (Section 3.5), Vegetation (Section 3.6), Wildlife (Section 3.7), Special Status and Sensitive Species (Section 3.8), Cultural Resources (Section 3.9), Land Use – Existing and Planned (Section 3.10), Socioeconomics and Community Resources (Section 3.11), Transportation and Communications (Section 3.12), Visual Resources (Section 3.13), and Electrical Effects and Human Health (Section 3.14).

For each of the resource topics, a ‘project area’ is defined, based on the geographic extent where direct or indirect impacts could occur. A summary of the project areas, by resource issue, are:

- Climate and Air Quality – ROW, substation sites, and regional air basins
- Geology, Soils and Paleontology – ROW, substation sites
- Water Resources – ROW, substation sites and adjacent/nearby surface waters and groundwater basins
- Floodplains and Wetlands – ROW, substation sites
- Vegetation – ROW, substation sites
- Wildlife – ROW, substation sites, regional setting and associated habitats
- Special Status and Sensitive Species – ROW, substation sites, regional setting and critical habitats
- Cultural Resources – ROW, substation sites
- Land Use – ROW, substation sites, adjacent/nearby land uses within 2 miles
- Socioeconomics – regional and local community settings
- Transportation and Communications – ROW, substation sites, and surrounding regional transportation systems
- Visual Resources – ROW, substation sites, and surrounding viewer locations within 2 miles
- Electrical Effects and Human Health – ROW, substation sites, adjacent areas with sensitive receptors

3.1.2 Resources Not Requiring Further Study

Resources that were identified as not requiring further study because of the minimal impact the project would have on them include Solid and Hazardous Waste and Noise.

3.2 Climate and Air Quality

3.2.1 Affected Environment

Upgrading the existing CH-MM and AU-CH transmission lines and related substations would not affect climate. Information on climate is provided as background information pertinent to the air quality analysis. The project area for climate and air encompasses the regional air basin in which the proposed project ROW, access roads, and substation sites are located.

3.2.1.1 Climate

The project is located in the high plains of the southeastern portion of Wyoming and the northern most portion of the front range of Colorado. From a climatological standpoint the project area is considered semi-arid, with the potential for wind blown dust being high, similar to the rest of the intermountain west. This premise is supported by the relatively high annual average wind speeds in the project area. Wind speeds range from an annual average of 12.2 miles per hour (mph) in Laramie, Wyoming, to 12.6 mph in Cheyenne, Wyoming, to 7.1 mph in Fort Collins, Colorado, near the southern terminus of the project (WRCC 2004).

As expected in a semi-arid area, annual average precipitation totals are low. Precipitation ranges from 10.36 inches per year in Medicine Bow, Wyoming, to 10.63 inches in Laramie, Wyoming, to 15.15 inches in Cheyenne, Wyoming, to 13.30 inches per year in Nunn, Colorado (WRCC 2004). Spring and early summer are the wettest periods, with May being the wettest month.

The project area experiences fairly large diurnal variations in temperature due to the relatively high project elevations and dry conditions. For example, in July, average temperatures range from the high 40s to low 50s in the morning, to the upper 80-degree range in the afternoon (WRCC 2004). January is the coldest month of the year with daytime temperatures ranging from around 10 degrees in the morning, to the high 30s and low 40s during the afternoon.

3.2.1.2 Air Quality

Applicable Laws and Regulations

Federal actions are required to conform to the Clean Air Act (CAA, 1970, as amended). The CAA is implemented at the federal, state and local government levels. The Environmental Protection Agency (EPA) has primary federal responsibility for implementation of CAA; responsible state agencies include the Wyoming Department of Environmental Quality (WDEQ) Air Quality Division (AQD) and the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD). To comply with the requirements of the CAA, the states of Wyoming and Colorado have developed State Implementation Plans (SIPs). The SIPs outline the steps and timelines that the states would follow to assure compliance with the requirements of the CAA.

Part of EPA's role is to develop and maintain National Ambient Air Quality Standards (NAAQS). Although the project area is climatologically predisposed to be dusty, the entire project area is in compliance with the NAAQS for all criteria pollutants (WDEQ-AQD, 2004 & CDPHE-APCD, 2004). This includes standards for sulfur dioxide (SO₂), nitrogen dioxide (NO₂) ozone and particulate matter. This means that the project is located within an "attainment" area and, as such, conformity determination requirements do not apply to the proposed project or alternatives.

Under the CAA, proposed new sources of air pollutants are required to obtain construction and then operating permits for the source(s) in question. Sources required to obtain permits must address Prevention of Significant Deterioration (PSD), visibility protection, and the general conformity provisions of the CAA as part of their permitting effort. However, the act does delineate between type and size of source, and exempts many sources from permitting requirements altogether.

Particulate Matter

Air pollutants resulting from this type of short-term construction-related project are primarily particulate matter. The majority of particulate matter is made up of solid particles, such as the dust generated when construction vehicles drive on a dirt road, although particulate matter may also contain liquid droplets. Most particulate matter is smaller than can be seen by the human eye. The dust that we see is made up of larger, darker, particles and many smaller particles that cannot be seen individually. The unit of measure used to measure the size of particulate matter is the “micron” (one micron is equal to one millionth of a meter). Larger particles, 50 microns and greater in diameter, tend to “fall out” of the air due to the pull of gravity and settle back on the ground within close proximity to where they were generated. Smaller particles, 10 microns and less in diameter (PM-10) remain airborne longer and are therefore subject to transport on prevailing winds and air currents.

For particulate matter two standards have been established. One for PM-10 and one for particulate matter less than 2.5 microns in diameter (PM-2.5). The EPA has established standards for these size ranges because studies have shown that particles smaller than 10 microns in diameter may be inhaled deep into the lungs and result in potential human health hazards. The very small “fine” particles, PM-2.5 and smaller, are considered to be potentially the greatest health concern. The majority of these fine particles are a result of a combustion process, for example, vehicle exhaust, wood and coal burning, or forest fires. Interestingly, the smaller dust particles also impact visibility more adversely than the larger particles. The unit of measure for the particulate standards is micro grams per cubic meter of air ($\mu\text{g}/\text{m}^3$). A micro gram is one millionth of a gram and a cubic meter is approximately 35 cubic feet. To put this unit of measure in perspective, it might be helpful to think of a particulate concentration of one micro gram per cubic meter as something approximating one grain of salt in a 55-gallon drum. As noted above, the project is located in an attainment area for all NAAQS. Annual average PM-10 levels in the project area run from approximately 30 percent to 70 percent of the annual average standard of 50 $\mu\text{g}/\text{m}^3$. Annual average PM-2.5 levels in the project area are approximately 30 to 40 percent of the standard of 15 $\mu\text{g}/\text{m}^3$.

3.2.2 Environmental Consequences and Mitigation Practices

3.2.2.1 Significance Criteria

The proposed project or alternatives would have significant impacts on air quality if:

- the construction, maintenance or operation of the proposed project or alternatives would cause or contribute to a violation of federal or state standards. Wyoming and Colorado standards are the same as the federal NAAQS for the air pollutants that may potentially result from the construction and operation of the project or alternatives.

3.2.2.2 Impacts of the Proposed Project

The impacts of the proposed project are discussed below by project component. Overall, the proposed project and alternatives would be in compliance with National Ambient Air Quality Standards and the state implementation plans for both Wyoming and Colorado. There are no federal or state permitting requirements for this source type, and relative to other types of air emission sources, the proposed project or alternatives would release very small amounts of pollutants for very short and intermittent periods of time. Quantification of pollutants is not required for this type of project. Similarly, the proposed project or alternatives are not subject to New Source Performance Standards and there is no New Source Performance Standard for this source type. The National Emissions Standards for Hazardous Air Pollutants are also not applicable to this project, nor are emissions limitations of the Air Quality Control Region. There would be no potential for exposure to either humans or the environment from radiation or hazardous chemicals associated with the proposed project or alternatives. The proposed project or alternatives would also not affect any area designated Class I under the Clean Air Act. From an air quality standpoint this project is a temporary and transient operation with a finite and relatively small amount of emissions to be released into the air.

The proposed project would result in short-term increases in total suspended particulates from the movement of vehicles, equipment and soil disturbances during construction. Short-term emissions of nitrogen oxides, hydrocarbons, carbon monoxide and sulfur dioxide from construction and maintenance vehicles would also result. Long-term, the project and action alternatives would result in reductions in suspended particulates and other vehicle air pollutants, since future maintenance requirements would be less than currently required.

Transmission System – CH-MM Transmission Line Rebuild

The proposed project would not result in significant impacts on air quality. Implementation of Western's Standard Construction and Mitigation Practices 14, 15, and 16 (Table 2.1-3), would insure that air quality impacts are minimized and that no violations, or contributions to violations, of federal or NAAQS or Wyoming state standards occur. Only minor, localized, temporary short-term impacts and no long-term impacts on air quality from either construction or operation activities would occur.

Construction impacts associated with the project would be similar to any other commercial or light industry construction activities. The predominant air pollutant that would be released into the atmosphere would be particulate matter (dust). In addition, there would be some gaseous pollutants released into the air, such as CO, from the vehicle exhaust of the construction equipment. Western's construction activities would proceed along the existing ROW, using existing access roads and overland construction methods. A few new access spur roads would be constructed to structure sites, and some sections of the existing access roads may need to be regraded or improved. Construction activities would be limited to the ROW. Consequently, soil disturbances and related dust impacts would primarily occur at structure sites, staging areas, and pulling sites. Construction activities would only be detectable in the immediate vicinity of the activity. Additionally, once construction stops for the day or work is completed in any given area, any impacts on air quality would stop.

Operational impacts on air quality would be minimal. The impacts would consist primarily of some gaseous pollutants being released into the air from the tailpipes of the few vehicles used for service activities. Some fugitive dust may also result if and when service vehicles travel over

unpaved areas. Reduced maintenance along the new line would reduce particulates generated from future maintenance traffic.

Transmission System – AU-CH Transmission Line Rebuild

Impacts to the AU-CH Transmission Line Rebuild would be similar to those described for the CH-MM Transmission Line Rebuild. The AU-CH Rebuild Project would not violate, nor contribute to violations of federal NAAQS or State of Colorado and Wyoming standards. There would be only minor, localized, temporary short-term impacts and no long-term impacts on air quality from either construction or operation activities.

Substations – Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

The proposed substation modifications would not result in any long-term impacts to air quality, and would not violate NAAQS or state (Wyoming and Colorado) air quality standards. Modifications to the existing Miracle Mile, Cheyenne and Ault Substations would result in very minor and temporary air quality impacts, resulting from the presence of construction vehicles and equipment at these existing facilities. No surface disturbances would be required at these existing Western facilities that would contribute to temporary increases in particulate matter.

Short-term air quality impacts would occur during the construction of the proposed Snowy Range Substation. The presence of construction crews, vehicles and equipment, and project grading would result in short-term impacts during the substation construction phase. These impacts would not be significant. Impacts would be short-term in duration. No adverse impacts to air quality would result during the operation of the new substation.

3.2.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts for CH-MM Alternative Route 1 would be similar to the proposed project. This alternative would involve the same types of short-term construction activities and localized soil disturbances and modifications within Western's existing ROWs. Since CH-MM Alternative Route 1 would include rebuilding the CH-MM 230-kV transmission line along the existing HJ-MM ROW and rebuilding the HJ-MM 115-kV transmission line along the existing CH-MM ROW, short-term air quality impacts would occur along Part A and Part B of the CH-MM Alternative Route 1 ROWs.

AU-CH Alternative Route 2

The construction and operation of the AU-CH Alternative Route 2 would result in the same impacts as described above for the CH-MM Rebuild Project.

No Action Alternative

Under the No Action alternative there would be no construction activities and therefore no commensurate construction related short-term air quality impacts. However, it is likely that operational impacts to air quality would be somewhat greater than under the proposed project or alternatives, as more frequent maintenance would likely be required. Nevertheless, the No Action operational impacts would not be significant.

3.3 Geology, Soils, and Paleontology

This section of the EA summarizes the geology, soils, paleontology and geotechnical hazards associated with lands crossed by the proposed project and alternatives. The project area for geology, soils and paleontology encompasses the proposed project ROW, substation sites, and access roads. Pertinent issues associated with these topics are whether geologic conditions would pose any constraints (e.g. slope instability) or geologic hazards that could affect the location or design of project facilities; whether the project would have the potential to affect geologic formations with known paleontological values or recorded sites; and whether the project would be likely to increase soil erosion that could affect local water quality and related water resources. Supporting detailed data on the location of geologic units, paleontological resources, soils, and geologic hazards is contained in Appendix B, Table 3.3, and should be referenced for site specific milepost information.

3.3.1 Affected Environment

3.3.1.1 Geology

Western's existing CH-MM ROW crosses numerous formations of sedimentary rocks of the Cretaceous and Jurassic Periods of the Mesozoic Era and Tertiary Period of the Cenozoic Era. The geography of the project area between the Miracle Mile Substation and approximately 13 miles west of Laramie, Wyoming, is characterized as rugged foothills and draws. Major geologic formations encountered between the Seminoe Mountains and Laramie, Wyoming include the following: Ferris and Hanna Formations (Paleocene Epoch of the Tertiary Period and Cretaceous Period), that consist of brown and gray, sandstone, shale, conglomerates and coal beds; Steele Shale (Cretaceous) a gray, soft, marine, shale containing numerous bentonite beds; Niobrara Formation (Cretaceous), a limestone and limy shale; Almond Formation (Cretaceous), a white and brown soft sandstone, gray sandy shale, coal and carbonaceous shale; and the Wind River Formation (Eocene Epoch of the Tertiary Period), characterized by claystone and sandstone with some conglomerate.

From approximately 13 miles west of Laramie to the Laramie substation, the route crosses recent depositional activity including alluvial, terrace, windblown, colluvium, alluvial fans and landslides of the Quaternary Period. Through Laramie, the route encounters Triassic Period Chugwater Formation of red shale and siltstone, and more recent alluvial deposits. East of Laramie, the route climbs the Laramie Mountains and encounters sedimentary rocks of the Permian Period Casper and Fountain Formations. These formations consist of sandstone, shale and limestone. Approximately 9 miles east of the Laramie Substation, near the top of the first ridge east of Laramie, the route encounters Precambrian Era Sherman Granite, which extends to the eastern flank of the mountain range.

From the east edge of the Laramie Mountains to the Ault Substation, the route crosses Tertiary and Cretaceous Period sedimentary deposits. Major geologic formations encountered in this area include: White River Formation (Eocene Epoch of the Tertiary Period) claystone, sandstone and conglomerate; Ogallala Formation (Oligocene Epoch of the Tertiary Period) sandstone, siltstone, and conglomerate; Laramie Formation (Cretaceous Period) sedimentary rock, composed of shale, claystone, sandstone, and major coal beds (No exposed coal beds noted in the project area.); unconsolidated surficial deposits and rocks of the Quaternary Pre-Bull Lake Age (Love Christensen 1985, Tweto 1979).

3.3.1.2 Soils

The Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS) is the primary source of soils information. Pertinent soil survey reports for the project area include: Laramie County, Wyoming, Western Part (Stevenson 2001), Albany County Area Wyoming (Rechner 1998), and the Weld County, Colorado, Northern Part (Crabb 1982). No document has been published for Carbon County, Wyoming, which is the western end of the project area. Appendix B, Table 3.3 describes soil types crossed by the proposed CH-MM and AU-CH transmission line rebuild projects.

The soils in the northern Hanna Basin, which encompasses most of the CH-MM route from the Seminoe Reservoir to MP CH-MM 59, are derived from sandstone and clay shales. These soils are generally classified as shallow to moderately deep with grass-shrub covers, and are mainly rangelands with some hay and irrigated cropland along the streams (Fallet et al., 1987). From MP CH-MM 58.8 to the west edge of the Laramie Mountains, approximately six miles east of the Laramie Substation, soils are characterized as moderately deep to very deep, typically well drained, moderately level to very steep. These soils generally support rangeland and wildlife habitat (Reckner, 1998). Across the Laramie Mountains, soils are characterized as very shallow to moderately deep, well drained, gently sloping to very steep. Rock outcrops are also present. These soils generally support rangeland and wildlife habitat (Reckner, 1998). From the east edge of the Laramie Mountains to Ault, Colorado, soils are characterized as alluvial fans, knolls, hills and ridges, and soil depths range from very shallow to very deep, nearly level to steep. Small rock outcrops are present. These soils generally support rangeland and wildlife habitat. A few areas are used as non-irrigated cropland. Wheat, barley, and sorghum are the main crops (Stevenson 2001, Crabb 1982).

3.3.1.3 Paleontology

Under federal legislation, (43 CFR 8365), only vertebrate fossils found on federal land are protected against collection and destruction, and vertebrate fossils are possible over much of the route. Plant fossils and invertebrate fossils are not specifically protected, but may be locally abundant in all but the Precambrian Era igneous and metamorphic rock formations.

The most significant identified areas of fossil-bearing formations are along the CH-MM route from MPs CH-MM 6.5 to 32, although formations with paleontological resource potential are crossed intermittently to MP 67.5. Major fossil-bearing formations encountered between MPs 6.5 and 32 include Cloverly (Jurassic), Sundance (Jurassic), Morrison (Jurassic), and Hanna (Paleocene). The route reportedly passes north of the “Break Fault System,” which has been the source for major dinosaur fossil discoveries (Lillegraven 1996). At MP 53 the route passes within 7 miles of the Como Bluffs “Dinosaur Graveyard” resource site, which is situated in the Jurassic Period Morrison Formation. The CH-MM ROW does not directly cross this formation, however, but rather crosses formations composed of marine sediments, which are very dissimilar to the geology at Como Bluffs. In the vicinity of MP CH-MM 67.0 to 67.5, the Medicine Bow Formation has the potential to contain dinosaur bone fragments and Late Cretaceous Period mammals (Lillegraven 1996, Gill 1970, Glass 1986).

Cretaceous Period formations east of Laramie, including Steele, Niobrara, and Almond Formations are marine deposits, and vertebrate fossil finds are considered unlikely. The Precambrian Era Sherman encountered in the Laramie Mountains is also an unlikely location for significant fossils. Within the Denver Basin, Tertiary Period formations and the Cretaceous Period Laramie Formation are known to produce mammalian, invertebrate, and plant fossils.

However, these areas are considered to be of low to moderate paleontologic interest (CDOT 2004).

3.3.1.4 Geologic Hazards

Seismic activity in the project area has been historically low. A number of mapped epicenters have been recorded along the project area between MPs CH-MM 8.0 to 29.0. Three events were between II and IV on the Modified Mercalli Intensity Scale of 1931 (MM), and three events between 2.9 and 3.2 on the Richter scale. These events occurred between 1938 and 1993. Three events occurred to the southeast of the project area from MP CH-MM 98.0 to 104.0. All of these events were recorded as IV on the MM and occurred between 1898 and 1935 (Case 1990). Numerous small events of magnitude II to IV MM were noted in the Brighton, Colorado, area that is approximately 50 miles south of the project termination point in Ault (Kirkham, 2000).

No geologic hazards have been documented for the project area, although numerous steep slopes are present. The Geological Survey of Wyoming has mapped geologic hazards including liquefaction, active wind blown sand, and landslides. No large-scale liquefaction, wind blown sand, or landslide areas have been recorded within the Wyoming part of the project area (Case, J.C. et al 1991; Case, Boyd 1987; Case, J.C. et al 1986). Similarly, no specific geologic hazards have been documented for the Colorado portion of the project area. Based on a literature review of the geography and geology of the project area, there are no known large-scale liquefaction prone areas, active wind blown sand areas or landslide areas.

3.3.2 Environmental Consequences and Mitigation Practices

3.3.2.1 Significance Criteria

Impacts to surface soils would be significant if:

- new construction or maintenance activities for the proposed action or alternatives caused major accelerated soil erosion, due to either project earthwork or the destruction of protective vegetation. Significant soils impacts could occur if uncontrolled or unmitigated erosion causes sediment loading of streams, which results in violations of water quality standards or impacts to existing water uses. Airborne dust resulting from increased erosion would be significant if it resulted in violations of air quality regulations.

Impacts to paleontological resources would be significant if:

- fossil deposits are destroyed without being properly excavated (other than invertebrate and plant fossils which are not protected by law).

Impacts to geology would be significant if:

- the proposed action or alternatives resulted in the loss of access to recoverable mineral, petroleum, or other geological resources.

3.3.2.2 Impacts of the Proposed Project

The proposed project would result in surficial soil disturbances at localized areas within Western's existing ROW. Short-term impacts on soils would be surface disturbances resulting in the loss of topsoil and vegetative cover leading to wind and water erosion. Long-term impacts

would be the potential further loss of topsoil and long-term negative impacts to vegetation resulting in wind and water erosion. Specific areas where soil disturbances would occur encompass: all structure sites, including where existing structures would be dismantled and new structures installed; at the proposed new Snowy Range substation site, where grading and soil movement would be necessary for the substation construction; and where Western's existing access roads would be improved with minor re-grading and water bars to stabilize current soil erosion processes. Impacts related to soil erosion would predominantly be very minor and below a level of significance, since limited ground disturbances would occur at structure sites and at the proposed substation site and erosion control measures would be implemented. Some beneficial effects would also result where existing access roads would be improved to stabilize on-going erosion processes. With implementation of Western's Standard Construction and Mitigation Practices, all soils impacts would be minor and primarily short-term in duration.

The proposed project could also result in the inadvertent destruction of fossils. Fossil deposits may be encountered along the existing ROW, particularly where formations with known paleontological resources are crossed. Short-term and long-term impacts include inadvertent disturbance or destruction of fossil deposits. Potential project-related effects could also include the discovery of new paleontological sites during excavations or due to construction related erosion.

Transmission System – CH-MM Transmission Line Rebuild

Soils – The CH-MM ROW predominantly crosses dry mountains, hills and valleys. Approximately 195 surface water bodies, including rivers, creeks, tributaries, canals and ditches are also crossed by the ROW. Potential impacts to water resources and water quality are discussed in Section 3.4 of the EA. Direct impacts to soils could result from the disturbance during construction of an estimated 414 acres of land that could cause increased erosion and sedimentation in local drainages and waterways along the proposed ROW. Vehicle traffic and vegetation clearing would occur mostly in previously disturbed areas and no new access roads would be constructed. During final design and construction, Western would implement Standard Construction and Mitigation Practices 3, 4, 5, 6, 7, 8 (Table 2.1-3), to insure minimum impacts from soil erosion would occur. These measures include, among others, provisions to place new structures away from drainages and surface water, as well as install water bars and similar erosion control measures in areas where soil erosion could result due to disturbances of steep slopes and near drainage crossings. With implementation of these measures, impacts resulting from soil disturbances along the ROW would not be significant.

Paleontology – Although impacts to fossil resources are possible along much of the route, certain sections of the route cross Jurassic and Cretaceous Period sedimentary rock formations that have produced significant dinosaur fossils. The remainder of the route crosses formations of marine sediments, Precambrian Period granite, and Tertiary Period sediments. Marine sediments may have locally abundant fossils, however these fossils are not generally protected by law and are seldom of significant scientific interest. Tertiary Period formations may have locally abundant fossils including plants and mammals, but these fossils are generally of lesser interest to scientists. Granitic formations contain few if any significant fossil deposits and are normally of little paleontologic interest. Appendix B, Table 3.3 provides a detailed description of the geologic formations encountered along the route and the anticipated paleontological significance of each formation. Impacts are not anticipated to be significant because augering for new structures would be relatively shallow and would not affect geological or associated paleontological resources. In addition, Western's Standard Construction and Special Mitigation Practice 32

(Table 2.1-3) would be implemented to insure that impacts to paleontological resources would be mitigated to a level below significant, if encountered during project construction.

Geology – No impacts to geologic resources would occur from the proposed project. No mineral resource development would be impeded or restricted by construction of the proposed project. In addition, no seismic activity or other geologic hazards are likely to occur along the transmission line ROW. Impacts to geology would not be significant.

Transmission System – AU-CH Transmission Line Rebuild

Soils – Soil impacts along the AU-CH Transmission Line Rebuild would be similar to those described above for the CH-MM transmission line rebuild project. Along the AU-CH Transmission Line Rebuild, direct impacts could result from the disturbance during construction of an estimated 87 acres of land that could cause erosion and sedimentation along the proposed ROW. This rebuild project would cross an estimated 37 surface waters, including creeks, tributaries and ditches.

Impacts to soils would be minor, and less than significant, for the AU-CH Transmission Rebuild Project, with implementation of Western's Standard Construction and Mitigation Practices 3, 4, 5, 6, 7, 8 (Table 2.1-3). The potential for soil impacts is minimal since no areas of steep slopes would be crossed, and no new access roads would be constructed. Impacts to soils would therefore result from vegetation clearing at structure sites and would be limited to areas within Western's existing ROW

Paleontology – Between the Cheyenne and the Ault Substation, Western's existing transmission line and ROW crosses Tertiary and Cretaceous period formations. Tertiary Period fossils may include plants and mammals that are relatively common and are frequently of only minor scientific interest. The Cretaceous period Laramie Formation is described as having locally abundant plant fossils, but few vertebrate fossils. The Laramie Formation is considered to have moderate paleontologic potential (CDOT 2004). Significant impacts to paleontologic resources are not anticipated because augering for new structures would be relatively shallow and not affect geological resources. In addition, Western's Standard Construction and Special Mitigation Practice 32 (Table 2.1-3) would be implemented to insure that paleontological impacts would not be significant.

Geology – No geologic impacts or geologic hazards are anticipated for the AU-CH Transmission Line Rebuild.

Substations – Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

Soils – The construction of the new Snowy Range Substation would result in the permanent surface disturbance of approximately 16 acres. The site is relatively flat, and no adverse soil erosion impacts are anticipated off site, with implementation of Western's Standard Construction Practices and Mitigation Practices 3, 4, 5, 6, 7, 8 (Table 2.1-3). Modifications to the existing Miracle Mile, Cheyenne, and Ault Substations would occur within the developed substation sites. Consequently, there would be only minor, and less than significant, disturbances or impacts to surface soils. These impacts would occur solely where soils are disturbed for foundation excavations.

Paleontology – The proposed Snowy Range Substation near MP 100 is within the Triassic Period Chugwater Formation. This formation is not recognized as a significant vertebrate fossil-bearing formation and no adverse impacts would occur with implementation of Special Mitigation Measure 32 (Table 2.1-3).

On-site modifications to the existing Miracle Mile, Cheyenne, and Ault Substations would not create ground disturbances; therefore, no impacts to paleontological resources would result.

Geology – No geologic impacts or geologic hazards are anticipated.

3.3.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

The CH-MM Alternative Route 1 Part A and Part B would build the proposed CH-MM 230-kV transmission line along the existing HJ-MM 115-kV line ROW (Part A). The HJ-MM 115-kV transmission line would be rebuilt along the existing CH-MM ROW (Part B). The same geologic formations are crossed by both Part A and Part B. Consequently, the potential impacts to soil and paleontologic resources of this alternative would be the same, or similar to the proposed project. Fourteen surface water bodies are crossed by CH-MM Alternative Route 1. Potential impacts to water resources and water quality from possible surface water runoff and increased sedimentation are discussed in Section 3.4. With implementation of Western's Standard Construction Practices and Mitigation Practices 3, 4, 5, 6, 7, 8, and Special Measure 32 (Table 2.1-3), minimum impacts from soil erosion or paleontological resource impacts would occur. No geologic impacts or geologic hazards are anticipated.

AU-CH Alternative Route 2

The AU-CH Alternative Route 2 is a minor realignment that would cross the same formations as the existing AU-CH ROW. Potential impacts to soil and paleontologic resources would, therefore, be the same as the proposed project. Western's Standard Construction Practices and Mitigation Practices 3, 4, 5, 6, 7, 8, and 32 (Table 2.1-3) would be implemented to insure minimum impacts from soil erosion or paleontological resource impacts would occur. No geologic impacts or geologic hazards are anticipated.

No Action Alternative

The No Action Alternative would avoid the short-term construction related impacts resulting from soil disturbances, and potential increases in soil erosion. This alternative would also avoid the potential for direct impacts to paleontological resources. Long-term, however, the No Action Alternative would result in increasing maintenance of the existing 115-kV line, including more frequent use of existing access roads, and soil disturbances where individual structures may need to be repaired or replaced. This on-going and increased activity by service and inspection vehicles would have the potential to increase soil erosion, especially where access roads are currently deteriorating from on-going erosion processes.

3.4 Water Resources

Federal regulations that ensure the protection of water resources include the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA). The SDWA regulates the protection of drinking water resources and pollution prevention strategies. The CWA regulates pollutant discharge into source waters. In accordance with the CWA, the EPA has established primary and secondary standards to guarantee quality drinking water free of contaminants. Through Section 404 of the CWA, the Army Corps of Engineers regulates the discharge of dredged and fill material into waters of the U.S. Surface water resources are discussed in this section. Floodplain and wetlands are critical areas of water resource management and are subsequently discussed in Section 3.5.

3.4.1 Affected Environment

The project area encompasses the proposed project ROW, substation sites, access roads, and adjacent areas that may be affected by construction activities (e.g., resulting from increased sedimentation). The project area is within the North Platte and South Platte River watersheds. The proposed transmission line rebuild ROW crosses 232 surface waters; 195 surface water bodies occur along the CH-MM ROW; the remaining 37 occur along the AU-CH ROW. Most are unnamed ephemeral channels that flow in response to snow melt or local precipitation events, or are perennial and intermittent streams and playas. Appendix B, Table 3.4 identifies all surface waters crossed by the project rebuild ROW. The largest surface waters crossed are the Medicine Bow and Laramie Rivers. Several unnamed channels are tributaries to perennial waters (e.g., Lone Tree, Spring, and Owl Creeks).

Water quality along the Wyoming portion of the transmission line is good to poor. The Laramie and Medicine Bow Rivers are Class 2AB waters that support all beneficial uses, including drinking water, game fish, non-game fish, fish consumption, other aquatic life, recreation, wildlife, agriculture, industry, and scenic values (Wyoming Department of Environmental Quality, Water Quality Division [WDEQ/WQD], 2001). Additional Class 2AB waters include the Little Laramie and Little Medicine Bow Rivers; Saylor, Austin, Troublesome, Difficulty, Rock, and Foote Creeks; and Allen and East Allen Lakes. Most other creeks and lakes near the ROW (e.g., Coal Creek, Corral Creek, and Dry Creek) are Class 2C or 3B. Class 2C waters support all of the above-listed uses except drinking water and game fish, whereas Class 3B waters support all uses except drinking water, game fish, non-game fish, and fish consumption.

No specific surface water quality data are available for the Colorado portion of the transmission line ROW. Surface water use in the northern portions of the ROW is for livestock (e.g., stockponds) and wildlife use. In the southern portion of the Colorado ROW, surface waters are also used to irrigate cropland.

No surface waters occur at or adjacent to the proposed Snowy Range substation location.

The project area overlies the Shirley, Hanna, and Laramie Basins in Wyoming (Richter 1981), the High Plains aquifer in the Cheyenne vicinity, and the South Platte River Basin in Colorado (Topper et al. 2003). Ground water in the Shirley, Hanna, and Laramie Basins occurs in local deposits of saturated alluvium, plus six major aquifers: the Tertiary, Mesaverde, Frontier, Cloverly, Sundance, and Casper-Tensleep aquifers (Richter 1981). Ground water in the High Plains aquifer occurs in the unconsolidated to semi-consolidated sand, gravels, clays, and silts of the Ogallala formation, as well as alluvial, valley-fill, dune, and loess deposits (Topper et al. 2003). In the South Platte River Basin, ground water occurs in a surficial aquifer composed on

alluvial and aeolian deposits; these are underlain by the Dakota-Cheyenne aquifer (Topper et al 2003).

3.4.2 Environmental Consequences and Mitigation Practices

3.4.2.1 Significance Criteria

Impacts to surface water would be significant if:

- the quantity and quality of discharges from streams are modified by instream construction or accidental contamination (e.g., oil or gasoline spills) to the extent that water used by established users (e.g., public water supplies and irrigation) is measurably reduced, aquatic habitats support reduced fish populations, or the water quality is in violation of state water quality criteria;
- sedimentation downstream of transmission line crossings affects water quality or the operation of irrigation water control structures.

Impacts to ground water would be significant if:

- construction of foundations for the transmission line structures impacts the quantity and quality of ground water used by established users (e.g. public water supplies and irrigation); the water quality is measurably reduced, or the water quality is in violation of state water quality criteria.

3.4.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Surface water use is not proposed, so no impacts to surface water quantity are anticipated. The project is not subject to National Primary or Secondary Drinking Water Regulations because these standards apply only to public water systems.

The CH-MM ROW traverses 195 surface water bodies (see Appendix B, Table 3.4) including stream channels and playas. All channels and playas would be spanned (i.e., structures would not be placed in the waterbody), and thus no direct impacts to surface waters would occur. Indirect impacts could result from the disturbance during construction of an estimated 414 acres of land that could cause erosion and sedimentation in surface waters along the proposed ROW, thereby adversely affecting surface water quality. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Some of this disturbance would likely occur in surface water floodplains (see Section 3.5.2) where potential for impacts to surface waters would be greater, although Western would implement more stringent erosion control measures to minimize impacts. Vehicle traffic along the ROW and on access roads would occasionally drive through ephemeral stream channels, which could result in stream sedimentation if runoff was to occur prior to stabilization in these areas. Accidental spills of petroleum products, hydraulic fluids, or antifreeze could also adversely impact surface water quality, although the potential for such spills is unlikely because refueling would not occur within 500 feet of any surface waterbody, and Western would implement a Spill Response Plan to clean up any spills and minimize potential for water pollution. Because surface-disturbing activities would not occur in stream channels or playas, because construction in any one area would be of short duration using best management practices to minimize erosion and sedimentation, and

because spills would be cleaned up immediately, impacts to surface water quality would not be significant. After construction, all except 0.9 acres would be stabilized and reclaimed and only limited traffic would occur on the ROW, so potential for surface water quality impacts during operation would be negligible (i.e., not significant).

If any excavation is to occur within or adjacent to a surface waterbody, Western would obtain the necessary permits from the U.S. Army Corps of Engineers, and would implement mitigation practices (see Table 2.1-3) to minimize erosion and sedimentation within the waterbody and to restore it to pre-existing conditions once construction is complete. Implementation of Western's Standard Construction and Mitigation Practices 10, 11, 12, and 13 (Table 2.1-3) would minimize any impacts to surface water.

The project would result in 0.9 acre of disturbance and thus would not require compliance with National Pollutant Discharge Elimination System (NPDES) along the transmission line route since the long-term disturbance is less than 5 acres.

The project would not impact any municipal drinking water supplies. Impacts to ground water would be limited to aquifers within about 10 feet of the surface (i.e., the depth of the structure holes, primarily surficial alluvial aquifers located near major streams (e.g. the Medicine Bow River. The aquifers to be impacted include the Tertiary and High Plains alluvial aquifers. In some areas, ground water may be encountered during excavation and dewatering of the excavated area may be required. However, any water removed from the hole would be discharged back to the surface and would likely infiltrate back into the alluvial aquifer, resulting in no net loss of ground water from the impacted aquifer or any connected aquifers. Furthermore, since excavation and structure erection occur relatively quickly, any dewatering operations would be of short duration and thus temporarily removing small volumes of ground water. Deeper aquifers including the Mesaverde, Frontier, Cloverly, Sundance, and the Casper-Tensleep aquifers would not be impacted by the project.

Accidental spills of petroleum products, hydraulic fluids, or antifreeze could also adversely impact ground water quality, although the potential for such spills is unlikely because refueling would not occur within 500 feet of any surface waterbody, and Western would implement a Spill Response Plan to clean up any spills and minimize potential for water pollution. Impacts to ground water would not be significant.

Transmission System - AU-CH Transmission Line Rebuild

Surface water use is not proposed, so no impacts to surface water quantity would occur.

Impacts from the construction of the AU-CH portion of the project would be similar to those described for the CH-MM portion, except that the AU-CH portion traverses only 37 surface water bodies, and only 87 acres would be disturbed. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Additionally, the AU-CH portion crosses irrigated cropland, but the minor amount of potential sedimentation would not be expected to adversely affect the operation of irrigation water control structures. Potential construction impacts would be as described for the CH-MM portion (i.e., minor and of short duration). After construction, all except 0.1 acres occupied by structures would be stabilized and reclaimed and limited traffic would occur on the ROW; therefore, potential impacts to surface waters during operations would be negligible. Implementation of Western's Standard Construction and Mitigation Practices 10, 11, 12, and 13 (Table 2.1-3) would minimize any impacts to surface water below a level of significance.

Impacts to ground water due to construction of the AU-CH portion of the project would be similar to those described for the CH-MM portion, except that the South Platte River Basin and High Plains alluvial aquifers may be encountered, but no significant impacts to ground water would occur. No impacts to the Dakota-Cheyenne aquifer would occur.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

Surface water use is not proposed. Consequently, no impacts to surface water quantity would occur.

The proposed Snowy Range substation site is located on uplands, so no direct impacts to surface waters would occur. Indirect impacts from substation construction could include erosion and sedimentation in downstream waters. The project would result in about 16 acres of long-term disturbance at the Snowy Range substation site and thus would require compliance with National Pollutant Discharge Elimination System (NPDES) requirements. The construction contractor would develop and implement a Storm Water Pollution Prevention plan at the substation construction site to control storm water runoff and minimize the potential for project-related sedimentation in surface waters. Impacts may also occur from potential spills from construction vehicles or from substation equipment (e.g., transformers). The proposed Snowy Range Substation would be located approximately 0.5 mi from the nearest surface water, so impacts from spills are unlikely, and Western would implement a Spill Response Plan to minimize impacts of any spills. Impacts would not be significant.

Work at the Miracle Mile, Cheyenne, and Ault substations would occur inside the existing fenced substation, so NPDES requirements do not apply. The Miracle Mile and Ault substations are approximately 660 ft from the nearest surface waterbody. The Cheyenne substation is more than 0.5 mi from the nearest surface waterbody. Western would implement a Spill Response Plan to minimize impacts of any spills. Impacts would not be significant. Substations would be accessed using existing gravel or paved roads, so surface water would not be affected by substation operation.

3.4.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts to surface waters under CH-MM Alternative Route 1 would be similar to those described for the proposed project and are anticipated to be minor and of short duration. CH-MM Alternative Route 1 crosses a total of 14 surface waterbodies, whereas the proposed route crosses seven. The increase in the total number of surface water crossings, compared to the proposed project, increases the potential for sedimentation in surface waters during construction. However, since the project would be constructed in phases, Part A in 2007, and Part B in 2008, potential impacts would be minimized.

Construction of CH-MM Alternative Route 1, Part A across the Laramie River floodplain would require 2 structures in the floodplain. Although this would increase potential impacts to surface waters, stream erosion control measures would be implemented to minimize impacts. Mitigation practices 10, 11, 12, and 13 (Table 2.1-3) would minimize impacts to surface waters along CH-MM Alternative Route 1, therefore impacts to surface waters would not be significant.

AU-CH Alternative Route 2

Impacts to surface waters under AU-CH Alternative Route 2 would be similar to those described for the proposed project and would be minor and of short duration. No surface waters are crossed by Alternative Route 2, and none occur along the proposed route at this location.

No Action Alternative

No impacts to surface water would occur under the No Action Alternative.

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3.5 Floodplains and Wetlands

Floodplains are areas where water overflows onto an area of usually dry land. Floodplains typically occur adjacent to existing waterways, and help moderate flood flow, recharge groundwater, spread silt to replenish soils, and provide habitat for a number of plant and animal species. Executive Order 11988, Floodplain Management, requires federal agencies to insure its actions minimize the impacts of floods on human health and safety and to restore the natural and beneficial values of floodplains. DOE regulations found at 10 CFR part 1022 require public notification of floodplain involvement. Western published a notification of floodplain/wetland involvement in the Federal Register on April 28, 2003.

Wetlands are defined under the CWA as areas that are inundated with surface or groundwater to the extent that they sufficiently and regularly support a prevalence of aquatic or semi-aquatic vegetation. Wetlands are characterized by distinct soil types as well as by unique plant and wildlife communities (EPA 2001c). Wetlands enhance water quality and supply by retaining and removing sediment; and provide flood storage, groundwater recharge and discharge, shoreline anchoring, and unique habitat for plants and wildlife. Section 404 of the CWA protects wetlands by giving regulatory and permitting authority of wetlands to USACE. Executive Order 11990 requires federal agencies to minimize the destruction or modification of wetlands and enhance the natural and beneficial values of them. DOE regulations found at 10 CFR 1022 require public notification of wetland involvement.

3.5.1 Affected Environment

The project area for wetlands and floodplains includes the existing and proposed expansion of the project ROW, access roads, and substation sites. Most of the 232 surface waters identified in the project area (see Appendix B, Table 3.4) are ephemeral channels that flow only in response to snowmelt or local storm events. The ephemeral channels may be steep-sided and incised or flat and shallow, but they are characteristically narrow, are within uplands, and lack floodplains.

The Federal Emergency Management Agency (FEMA) maps show floodplains at 16 locations on the CH-MM portion of the transmission line ROW, and at two locations on the AU-CH portion (Appendix B, Table 3.4). The largest floodplains are at the Little Laramie River/Brown's Creek confluence northwest of Laramie (MP 87, approximately 0.5 mile wide), and the Rock Creek/Three Mile Creek/Coal Bank Creek (MP 63, approximately 0.75 mile wide) confluence southwest of Rock River.

An estimated 54 potential wetlands are intersected by the transmission line ROW, 51 in the CH-MM ROW and three in the AU-CH ROW. Most are stream channels or playas classified as "palustrine emergent" or "riverine unconsolidated bottom" (National Wetland Inventory maps); however, shrub/scrub wetlands are present at several locations (e.g., along Rock and Three Mile Creeks [MP 63]), as are other wetland types.

No floodplains or wetlands occur at or adjacent to the proposed Snowy Range substation location.

3.5.2 Environmental Consequences and Mitigation Practices

3.5.2.1 Significance Criteria

Impacts to floodplains and wetlands would be significant if:

- a flood event caused damage to the transmission line structures, or the construction of the transmission line structures in a floodplain would increase the potential for flooding or violate applicable floodplain protection standards;
- construction resulted in a wetland fill impact of 0.5 acre or greater thereby requiring a Section 404 Individual Permit application to the U.S. Army Corps of Engineers.

3.5.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Floodplains and wetlands would be spanned, where possible (i.e., structures would not be placed in these areas), and thus direct impacts to floodplains and wetlands would be low. The floodplains at Rock Creek/Three Mile Creek/Coal Bank Creek (at MP 63, approximately 0.75 mile wide) (Figure 3.5-1) and the Little Laramie River (at MP 87, approximately 0.5 mile wide) (Figure 3.5-2) cannot be spanned because of the width, and thus some direct disturbance in these floodplains and potential wetlands would be necessary. Disturbance would be limited to the installation of up to two structures (about 0.3 acre of construction-related disturbance) and vehicle traffic. Long-term disturbance would be limited to the footprint of up to two structures (<0.001 acre). Structures have existed in these floodplains since the 1930s and have not been damaged by floods, so potential for the new structures to be damaged by floods is low to none. There is no potential for structures to cause flooding. If any excavation is to occur within a wetland, Western would obtain the necessary permits from the U.S. Army Corps of Engineers and would implement Western's Standard Construction and Mitigation Practices 10, 11, 12, 13, 19, and 27 (Table 2.1-3) to minimize erosion and sedimentation within the waterbody and to restore it to preexisting conditions once construction is complete, so no long-term loss of wetland vegetation would occur and impacts would not be significant.

Indirect impacts could occur as a result of the disturbance of an estimated 414 acres of adjacent land, which could cause erosion and sedimentation in floodplains and wetlands along the proposed ROW, thereby adversely affecting floodplains and wetlands. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Accidental spills of petroleum products, hydraulic fluids, or antifreeze could also adversely impact floodplains and/or wetlands, although the potential for such spills is unlikely because refueling would not occur within 500 ft of any floodplain or wetland, and Western would implement a Spill Response Plan to clean up any spills and minimize potential for water pollution. Existing structures would be removed from some of the floodplains that would be crossed (e.g., the Laramie and Little Laramie Rivers and numerous creeks), resulting in disturbance just at the base of each structure. However, because floodplains and wetlands would be avoided where feasible, because construction in any one area would be of short duration using best management practices to minimize erosion and sedimentation, and because spills would be cleaned up immediately, impacts to floodplains and wetlands during construction would be minor and of short duration. All disturbed areas would be reclaimed, except for 0.9 acres occupied by structures, and limited traffic would occur on the ROW, so impacts to floodplains and wetlands during operation would be negligible. Implementation of Western's Standard Construction and Mitigation Practices 10, 11, 12, 13, 19, and 27 (Table 2.1-3) would minimize impacts to floodplains and wetlands. Impacts to floodplains and wetlands would not be significant.

Transmission System - AU-CH Transmission Line Rebuild

Impacts to floodplains and wetlands along the AU-CH portion of the project would be similar to those described for the proposed project, except that the two floodplains and three potential wetlands that occur on the AU-CH ROW would be spanned, so no direct impacts would occur.

Indirect impacts would be limited to potential for sedimentation from 87 acres of surface disturbance nearby or potential spills. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. As with the proposed project, these construction-related impacts are expected to be minor and temporary and thus would not be significant. Since there would be only 0.1 acre of life-of-project disturbance, and only limited traffic would occur on the ROW, operational impacts would be negligible.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

The Snowy Range substation would be located on uplands, and since no floodplains or wetland occur near the site, no direct or indirect impacts would occur. The proposed Snowy Range Substation would be located approximately 0.5 mi from the nearest surface water, so impacts from spills are unlikely, and Western would implement a Spill Response Plan to minimize impacts of any spills. Impacts would not be significant.

Work at the Miracle Mile, Cheyenne, and Ault substations would occur inside the existing fenced substation. The Miracle Mile and Ault substations are approximately 660 feet from the nearest surface waterbody. The Cheyenne substation is more than 0.5 mi from the nearest surface waterbody. Western would implement a Spill Response Plan to minimize impacts of any spills. Impacts to floodplains and wetlands would not be significant. The substations would be accessed by existing gravel or paved roads, and thus no operational impacts would occur.

3.5.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

CH-MM Alternative Route 1, Part A would cross one floodplain, the Laramie River floodplain, at a point where it is much wider (about 0.5 mi) than the crossing by CH-MM Alternative Route 1, Part B (<0.25 mi) (see Figure 3.5-3). As with the Rock Creek/Three Mile Creek/Coal Bank Creek and Little Laramie River Floodplains, Western may have to install up to two additional structures in the Laramie River floodplain along Part A, for which impacts would be similar to those described for the proposed project (about 0.3 acres of short-term construction related disturbance). Long-term disturbance would be limited to the footprint of the two structures (0.001 acres).

The floodplain along CH-MM Alternative Route 1, Part A may contain wetlands; a delineation may be required if construction is to occur within this floodplain. If wetlands are identified, Western would obtain authorization from the U.S. Army Corps of Engineers for all disturbances and would develop and implement a mitigation plan as required by Section 404 of the Clean Water Act. Western's Standard Construction and Mitigation Practices 10, 11, 12, 13, 19, and 27 (Table 2.1-3) would be implemented within the Laramie River Floodplain. Impacts to these floodplains/potential wetlands would not be significant.

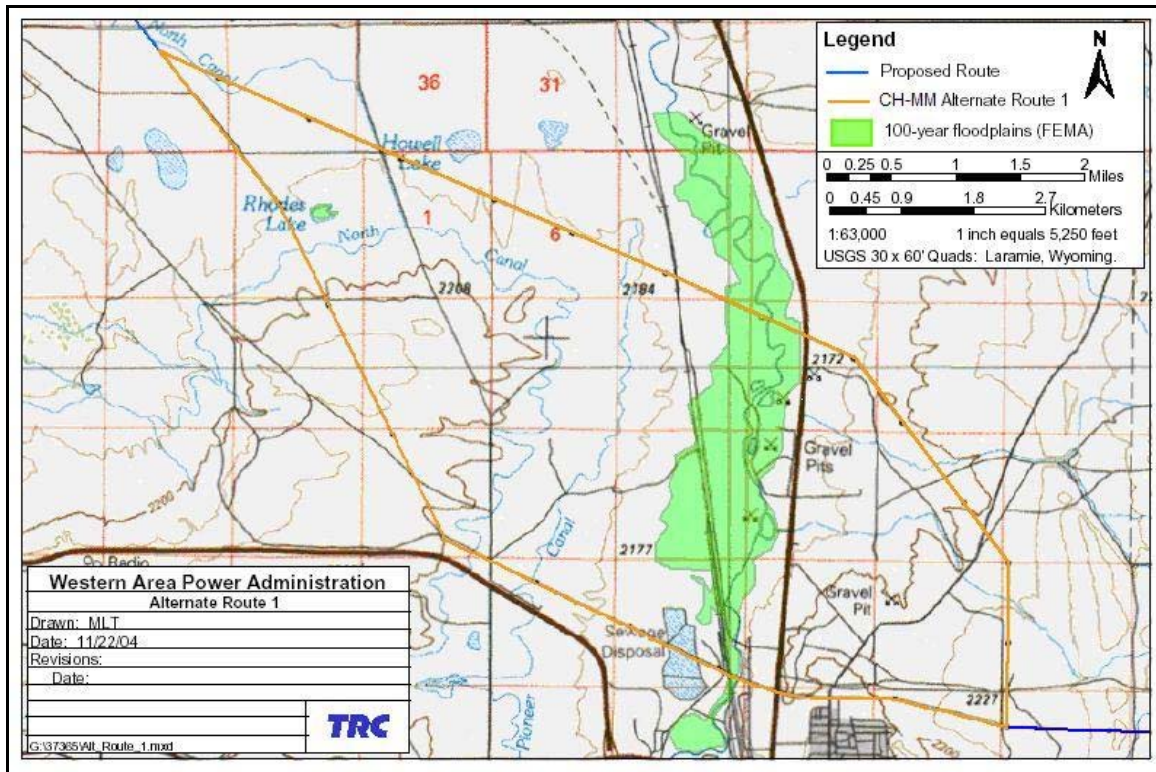


Figure 3.5-3 CH-MM Alternate Route 1 Near the 100-year Floodplains

AU-CH Alternative Route 2

Alternative Route 2 does not cross any floodplains or wetlands and thus would not impact these resources. No significant impacts would occur.

No Action Alternative

Under the Action Alternative, no impacts to floodplains or wetlands would occur.

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3.6 Vegetation

3.6.1 Affected Environment

The project area for vegetation includes the existing and proposed expansion of the project ROW, access roads, and substation sites.

The principal vegetation types along the ROW are mixed grass prairie, shortgrass prairie, Wyoming big sagebrush steppe, and dryland and irrigated cropland (U.S. Geological Survey [USGS], 1996; Colorado State University [CSU], 2003).

Mixed grass prairie, which is present along the route in Wyoming and Colorado, is comprised of bunchgrasses, sod-forming grasses, and a variety of forbs and small shrubs. Common species include needle-and-thread grass, western wheatgrass, blue grama, Sandberg bluegrass, threadleaf sedge, needleleaf sedge, Junegrass, Indian ricegrass, prickly pear cactus, scarlet globemallow, fringed sagewort, Hood's phlox, milkvetch, and locoweed (Knight, 1994). Depending on location, other species such as bluebunch wheatgrass, little bluestem, sideoats grama, prairie sandreed, sand dropseed, alkali sacaton, fourwing saltbush, greasewood, and inland saltgrass may be present.

Shortgrass prairie, present along the route in Colorado, is typically dominated by blue grama and buffalograss, which comprise 70-90% of vegetative composition by weight. During droughts, buffalograss tends to replace blue grama (Holechek et al., 1989). Winterfat is a common shrub, and species that occur in mixed grass prairie (as listed above) also occur in lesser amounts in shortgrass prairie.

Wyoming big sagebrush steppe, which occurs along the route in Wyoming, is dominated by Wyoming big sagebrush, either in dense homogeneous stands or in open shrublands interspersed with grasses and forbs. Associated species typically include western wheatgrass, Junegrass, needle-and-thread grass, Sandberg bluegrass, prickly pear cactus, scarlet globemallow, and rabbitbrush. Gardner's sagebrush, silver sagebrush, basin big sagebrush, and greasewood may also be present, depending on landscape position.

Dryland and irrigated cropland dominates the southernmost 17 miles of the transmission line ROW in Colorado. Crops include corn, wheat, and hay.

Other vegetation types occurring along the route include aspen woodland (at about MPs 105-107 between Laramie and Cheyenne), basin rock and soil (MPs 93 and 95 in the Laramie Basin and MP 121 on the eastern foothills of the Laramie Range), desert shrub (MPs 24, 25, 40, and 41 in the northwestern portion of the ROW), greasewood (scattered along the ROW), irrigated crops (at major drainages and irrigation ditches), lodgepole pine (MPs 130 and 131 west of Cheyenne), xeric upland shrub (scattered along the ROW), dryland crop (MPs 145 and 146 southwest of Cheyenne), forest riparian (MPs 119, 122, 127, and 128 along Crow and Lodgepole Creeks and their tributaries), and grass wetland (MPs 51 and 52 at Horne Lake) (USGS, 1996).

Vegetation at the proposed Snowy Range substation location is shortgrass prairie.

3.6.2 Environmental Consequences and Mitigation Practices

3.6.2.1 Significance Criteria

Impacts to vegetation would be significant if:

- construction or operation results in a loss of or substantial impact to a CNHP designated Conservation Area;
- construction or operation results in the establishment of noxious weeds that inhibit or reduce agricultural productivity for a landowner.

3.6.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

As part of the proposed project, Western would implement their Standard Construction and Mitigation Practices 3, 4, 5, 6, 7, 8, and 24 (Table 2.1-3), which would minimize the potential for adverse impacts to vegetation to less than significant levels. In addition, riparian areas located along the ROW would be spanned and physical disturbance to riparian vegetation would be avoided (Standard Practice 19). Equipment and vehicles would not cross riparian areas on the ROW during construction and operation activities. Existing bridges or fords would be used to access the ROW on either side of riparian areas.

The CH-MM portion of the project would result in the initial direct disturbance of 414 acres (Table 2.1-2) of native vegetation, mostly in mixed grass prairie, shortgrass prairie, and Wyoming big sagebrush steppe. Tree removal for electrical clearances is not anticipated. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Long-term disturbance would be about 0.9 acres. Disturbance of vegetation in rangeland areas would not reduce forage production or grazing capacity. In addition, because the overall disturbance area would be small, the project would not impact vegetative genetic or species diversity. All areas disturbed during construction that are not required for operation and maintenance would be reclaimed and left in a condition to facilitate revegetation, so impacts to vegetation would not be significant.

Since riparian areas would be avoided where possible, impacts to riparian areas are expected to be low. Small portions of the riparian areas adjacent to Rock Creek/Three Mile Creek/Coal Bank Creek and the Little Laramie River may have to be disturbed because the floodplains are 0.5 mile or more wide, but the estimated disturbance in these riparian areas is about 0.3 acre. Long-term disturbance to all vegetation would be about 0.9 acres, and long-term disturbance in riparian areas would be less than 0.001 acre (about the amount of land occupied by four transmission line structures), so impacts to riparian vegetation would not be significant.

Surface disturbance may result in the introduction and/or spread of weeds. Weeds may be introduced or may spread from one location to another on equipment, or weeds may opportunistically invade disturbed areas. Western would minimize the introduction and/or spread of weeds by washing all equipment at a commercial facility prior to the start of construction each year, by avoiding vehicle traffic in known weedy areas, and by rewashing equipment if weeds are encountered prior to moving along the ROW (Table 2.1-3, Mitigation Practice 24). Western would reclaim all disturbed areas as soon as practical after construction each year and would

implement a weed control program (in consultation with the BLM and private landowners) if the project causes the spread of weeds.

Transmission System - AU-CH Transmission Line Rebuild

The AU-CH portion of the project would result in the disturbance of 87 acres of vegetation, including native shortgrass prairie and dryland and irrigated cropland (Table 2.1-2). However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Long-term disturbance would be about 0.1 acre. Disturbance of vegetation in rangeland areas would not reduce forage production or grazing capacity. Genetic and species diversity would not be impacted. Agricultural lands would not be taken out of production as a result of transmission line construction. All areas disturbed during construction that are not required for operation and maintenance would be reclaimed using native adapted species or appropriate crop species once construction is complete, so impacts to vegetation would be minor and short-term. As part of the proposed project, Western would implement their Standard Construction and Mitigation Practices 3, 4, 5, 6, 7, 8, and 24 (Table 2.1.3).

Since riparian areas would be avoided, where possible, impacts to riparian areas are expected to be low to none (Table 2.1-3, Mitigation Practice 19). Long-term disturbance to all vegetation would be about 0.1 acre, so impacts to riparian vegetation would not be significant.

Potential for weed invasion/spread would be the same as described for the proposed project, and impacts would be minor and of short duration.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

Construction of the Snowy Range Substation would result in the loss of about 16 acres of shortgrass prairie vegetation. No riparian vegetation would be impacted. Potential for weed invasion would be the same as described for the proposed project. Minor adverse effects to vegetation would result, but Mitigation Practice 24 (Table 2.1-3) would be implemented.

3.6.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts to vegetation under CH-MM Alternative Route 1 would be similar to those described for the proposed project; both routes are primarily in shortgrass prairie vegetation. CH-MM Alternative Route 1 could impact slightly more riparian vegetation at the Laramie River crossing on CH-MM Alternative Route 1, Part A, but this disturbance would be only about 0.3 acre and thus not significant. Potential for weed invasion would be the same as described for the proposed project (Table 2.1-3, Mitigation Practice 24). Impacts under CH-MM Alternative Route 1 are expected to be minor and of short duration.

AU-CH Alternative Route 2

The two deviations that make up Alternative Route 2 would impact the same vegetation type as the proposed project (cropland), and thus impacts would be the same as described for the proposed project. Impacts under Alternative Route 2 are expected to be minor and of short duration.

No Action Alternative

Under the No Action Alternative, no impacts to vegetation would occur.

3.7 Wildlife

3.7.1 Affected Environment

The project area for wildlife includes the existing and proposed expansion of the project ROW, the substation sites, regional settings and associated habitats.

The topography, water resources, and vegetation along the transmission line ROW provide habitat for numerous wildlife species.

3.7.1.1 Big Game

Two big game species, pronghorn antelope and mule deer, are common along the ROW. Elk and white-tailed deer also occur but are less common.

In Wyoming, pronghorn along the ROW belong to the Chalk Bluffs, Iron Mountain, Cooper Lake, and Medicine Bow herds (Wyoming Game and Fish Department [WGFD], 2004a). In Colorado, pronghorn are in Data Analysis Unit-1 (DAU-1), hunt unit 87. Since 1998, pronghorn populations have been consistently above WGFD objectives for the Iron Mountain and Cooper Lake herds and below objectives for the Medicine Bow herd (Table 3.7-1). The population objective for the Chalk Bluffs herd is 450, but this population is not monitored (WGFD, 2004a). The population objective for DAU-1 (in Colorado) is 5,600, and in 2003 the estimated population was below objective at 4,280.

Table 3.7-1. Big Game Herd Units, Population Objectives, and Population Estimates ¹

Species/Herd Unit	Population Objective	Average Population, 1998-2002 ²	2003 Population ²	Projected 2004 Population ²
Pronghorn Antelope				
Chalk Bluffs	450	na	na	na
Iron Mountain	13,000	17,433	14,288	14,450
Cooper Lake	3,000	6,166	5,837	6,264
Medicine Bow	60,000	52,105	56,804	56,183
DAU-1	5,600	na	4,280	4,330
Mule Deer				
Goshen Rim	25,000	21,583	20,968	19,820
Iron Mountain	15,000	16,989	19,235	19,100
Sheep Mountain	15,000	11,299	10,885	10,750
Shirley Mountain	10,000	5,616	5,306	5,549
DAU-5	1,500	na	1,480	1,430
Elk				
Iron Mountain	1,800	na	na	na
Snowy Range	6,000	6,401	5,473	5,449
Shirley Mountain	800	899	797	674
White-tailed Deer				
Southeast Wyoming	4,000	na	na	Na

¹ WGFD (2003).

² na = not available.

In Wyoming, approximately 57 miles of the proposed ROW is in pronghorn crucial winter/year-long range, and is scattered throughout the ROW. Winter/year-long range is that in which a

portion of the area is used throughout the year but during winter has a significant influx of animals from other seasonal ranges (WGFD, n.d.). Crucial winter range is defined as winter range that has been documented as the determining factor in a population's ability to maintain itself at a desired level over the long-term. In Colorado, the ROW intersects 27.2 miles of pronghorn winter range, 9.2 miles of winter concentration areas, and 22.5 miles of severe winter range. In Colorado, winter range is defined as that part of the overall range where 90% of the individuals are located between the first heavy snowfall and spring green-up during the average five winters out of ten, or for a site-specific period defined by CDOW personnel for that DAU. A winter concentration area is that part of winter range where animal densities are at least 200% greater than surrounding winter range density during the same period used to define winter range in the average five winters out of ten. Severe winter range is that part of the winter range where 90% of the individuals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten.

In Wyoming, mule deer along the ROW belong to the Goshen Rim, Iron Mountain, Sheep Mountain, and Shirley Mountain herds (WGFD, 2004a). Since 1998, populations in the Iron Mountain herd unit have been consistently above objective, while populations in the Goshen Rim, Sheep Mountain, and Shirley Mountain herd units have been below objectives (Table 3.7-1). The objective for mule deer in DAU-5 (in Colorado) is 1,500, and in 2003 the estimated population size was 1,480, essentially at objective. In Wyoming, an estimated 24 miles of the ROW are within mule deer crucial winter/year-long range, which is scattered all along the ROW in Wyoming. No mule deer winter range occurs along the ROW in Colorado.

The Iron Mountain, Snowy Range, and Shirley Mountain elk herd units occur along the transmission line in Wyoming. No population estimates are available for the Iron Mountain herd. Through 2002, the Snowy Range herd population has been above objective but declined to below objective in 2003 (Table 3.7-1) (WGFD, 2004a). The Shirley Mountain herd is essentially at objective but is projected to decline to below objective in 2004. In Wyoming, an estimated 8 miles (at MPs 108-116) of the ROW are within elk crucial winter/year-long range. Elk are extremely rare along the ROW in Colorado.

In Wyoming, white-tailed deer may occur in the riparian areas of the Medicine Bow River and its larger tributaries, and these deer are part of the Southeast Wyoming herd unit. The population objective for this herd is 4,000 animals, but no current population data are available. White-tailed deer are rare along the ROW in Colorado. No white-tailed deer crucial winter or winter range occurs along the ROW.

An estimated 12 miles (mostly north of the Medicine Bow River [discontinuously along MPs 16-38] and between Laramie and Cheyenne [MPs 117-119]) of the ROW intersect with overlapping crucial winter/year-long range for pronghorn and mule deer. Less than 1 mile (MP 116) intersects with overlapping mule deer and elk crucial winter/year-long range.

The proposed Snowy Range substation location is yearlong range for pronghorn antelope and mule deer.

3.7.1.2 Other Mammals

Based on range and habitat preference, seven mammalian predator species are likely to occur along the ROW: coyote, raccoon, long-tailed weasel, badger, western spotted skunk, mountain lion, and bobcat (Clark and Stromberg, 1987; WGFD, 2004b).

Also based upon range and habitat information, three lagomorph species, desert cottontail, black-tailed jackrabbit, and white-tailed jackrabbit, would likely occur along the transmission line ROW (Mariah Associates, Inc., 1979; Clark and Stromberg, 1987; USGS, 1996; WGFD, 2004b). Other small mammals present would likely include least chipmunk, Wyoming ground squirrel, thirteen-lined ground squirrel, northern pocket gopher, olive-backed pocket mouse, Ord's kangaroo mouse, deer mouse, northern grasshopper mouse, bushy-tailed woodrat, and vole. Thirty-six white-tailed prairie dog colonies occur on or adjacent to the CH-MM portion of the project. No black- or white-tailed prairie dog colonies occur on the AU-CH portion.

3.7.1.3 Raptors

All raptors and their nests are protected from take or disturbance under the *Migratory Bird Treaty Act* (16 *United States Code* [U.S.C.] 701-715) and *Wyoming Statutes* 23-1-101 and 23-3-108. Certain species are also afforded protection under the *Bald Eagle Protection Act* (16 U.S.C. 668-668d) and the *Endangered Species Act* (ESA) (16 U.S.C. 1531 et seq.).

Raptor species known to occur or to potentially occur in the project area include bald eagle, golden eagle, ferruginous hawk, rough-legged hawk, red-tailed hawk, Swainson's hawk, prairie falcon, peregrine falcon, American kestrel, merlin, Cooper's hawk, sharp-shinned hawk, northern harrier, turkey vulture, osprey, great-horned owl, and burrowing owl (Kingery and Dillon, 1988; WGFD, 2004b). Most breeding species migrate to more hospitable climates during the winter; however, golden eagles and great-horned owls may remain year-round. Rough-legged hawks winter in the region (WGFD, 2004b; Dorn and Dorn, 1999).

One hundred eleven raptor nests are known to occur within 0.5 miles of the proposed ROW: 10 golden eagle, 18 red-tailed hawk, 68 ferruginous hawk, one Swainson's hawk, one American kestrel, and 13 unknown (Mariah Associates Inc. n.d.). Additionally, one golden eagle, six ferruginous hawk, five Swainson's hawk, one great-horned owl, one American kestrel, two red-tailed hawk, and 10 unknown nests occur within 1.0 mile. The known raptor nests are distributed along the length of the transmission line. Numerous rock outcrops, cliffs, and trees provide suitable substrates for raptor nesting; consequently, additional nests are likely to occur in the vicinity. The entire line is considered suitable habitat for raptor hunting, foraging, and perching.

A particularly diverse nesting area is found between structures 58-1 and 59-1 (between MP 61.5 and 63), near the town of Rock River, where the CH-MM line crosses Rock Creek. Nests in this area include Golden Eagle (1), red tail (4), swainsons (2), and unknown (4). Also in the same location is a great blue heron rookery.

In January 2006, Western's maintenance crews were performing routine line patrol at the Rock Creek crossing when they discovered the carcass of a Golden Eagle within the ROW of the CH-MM transmission line. The discovery was reported to the USFWS in Cheyenne, and the carcass was retrieved. It is possible that the eagle collided with the overhead ground wires on either the CH-MM line or the HJ-MM line.

No raptor nests are known to occur within 1.0 mile of the proposed Snowy Range substation location.

3.7.1.4 Upland Game Birds

Three species of upland game birds, greater sage-grouse, Columbian sharp-tailed grouse, and mourning dove, may occur along the transmission line ROW.

Greater sage-grouse habitat is scattered along the line from the city of Laramie northwest to the Seminoe Mountains in bottomlands and on uplands. South of Cheyenne, habitat for greater sage-grouse is limited, and no leks are known to occur near the ROW (WGFD, 2004; Dennis, Colorado Division of Wildlife [CDOW], 2004). The area within 0.25 mile of a lek is considered potential breeding habitat; the area within 2.0 miles is considered potential nesting habitat. No leks occur within 0.25 mile of the line. Twenty-two greater sage-grouse leks (strutting and breeding areas) are known to occur within 2.0 miles of the line (Bureau of Land Management [BLM], 2002a). Therefore, none of the line is potential breeding habitat, but 23 miles of the line provide potential nesting habitat. Greater sage-grouse wintering areas are likely to occur in sagebrush vegetation that is widespread along the route (see Section 3.6) (USGS, 1996). No greater sage-grouse leks are known to occur within 2.0 miles of the proposed Snowy Range substation location.

Columbian sharp-tailed grouse inhabit the grasslands that are widespread along the route; however, these grouse would be rare visitors to the ROW in Colorado (Dennis, CDOW, 2004). No known breeding or nesting sites occur within 2.0 miles of the route (BLM, 2002a) in Wyoming.

Mourning dove is a common breeding bird in the region (BLM, 1993) that migrates from the area during the fall and winter. Doves occur in shrub-covered areas along perennial water courses and washes that provide nesting and roosting cover.

3.7.1.5 Other Birds

Numerous other birds likely occur in the project area. The various habitats attract an assemblage of songbirds. Local waters, riparian areas, and wetlands attract numerous species of waterfowl, shorebirds, and waders.

Common non-game birds along the transmission line, based on range and habitat preference (Kingery and Dillon, 1988; USGS, 1996; WGFD, 2004b), include common nighthawk, Say's phoebe, western kingbird, horned lark, swallow (violet-green, barn, etc.), black-billed magpie, common raven, rock wren, mountain bluebird, loggerhead shrike, Brewer's sparrow, vesper sparrow, sage sparrow, lark bunting, McCown's longspur, red-winged blackbird, western meadowlark, Brewer's blackbird, common grackle, and brown-headed cowbird.

Several species of wading/shore birds and waterfowl may occur along the rivers and creeks and around small perennial ponds along the ROW. Wading/shore birds may include great blue heron, snowy egret, black-crowned night heron, American white pelican, killdeer, American avocet, and spotted sandpiper. Waterfowl species probably occurring along the line include pied-billed grebe, American coot, Canada goose, mallard, green-winged teal, northern pintail, blue-winged teal, northern shoveler, gadwall, American widgeon, common merganser, and ruddy duck. Any of these species may nest in suitable habitat along the ROW (Kingery and Dillon, 1988; USGS, 1996; Dorn and Dorn, 1999; WGFD, 2004b).

Numerous sensitive bird species may also occur along the line and these are listed in Table 3.8-2 in Section 3.8.

3.7.1.6 Fisheries

The Medicine Bow and Laramie Rivers contain game fish including brook trout, brown trout, rainbow trout, and walleye (BLM, 1990). Non-game fish include suckers (longnose and white), darters (Iowa and Johnny), creek chub, sand shiner, longnose dace, and carp. Larger tributaries to

these rivers may support brook trout, brown trout, and creek chub, and other species may move into these waters during periods of high flow.

3.7.1.7 Other Species

Several species of snakes, including prairie rattlesnake, gopher snake, and wandering garter snake, likely occur in suitable habitat along the transmission line ROW, as do the amphibians tiger salamander and northern leopard frog and the reptiles eastern short-horned lizard and northern sagebrush lizard.

3.7.2 Environmental Consequences and Mitigation Practices

3.7.2.1 Significance Criteria

Impacts to wildlife resources would be considered significant if:

- construction activities occur on established lek areas or nesting grounds of greater sage-grouse during the breeding and nesting season;
- important mule deer or pronghorn antelope winter range is affected by construction during critical winter periods, causing disturbance or displacement of wintering animals;
- active raptor nests are disturbed;
- a long-term decrease in economically or ecologically important wildlife populations;
- a population trend warranting a species listing as Federal threatened or endangered.

3.7.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Big Game – Direct impacts to big game could include mortality due to collisions with vehicles; however, this type of impact would occur rarely, if at all, and thus is expected to be minimal. Indirect impacts to big game would include loss of 414 acres of habitat during construction and temporary displacement from adjacent habitats due to human activity. However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time and since much of the CH-MM portion of the ROW is undeveloped, with abundant big game habitat, indirect effects would be minimal.

Construction would not occur within pronghorn or elk crucial winter range between November 15 and April 30 unless an exception is granted by the BLM in Wyoming; therefore, no significant impacts to big game in crucial winter ranges would occur (Table 2.1-3, Mitigation Practice 21).

Impacts during operation would be minimal because only 0.9 acres of habitat would remain disturbed, and big game generally adapt to occasional traffic and limited human activity.

Other Mammals – Project construction could result in direct mortality of small, less mobile mammals within the ROW. Small mammals would be more subject to mortality from construction than big game, but impacts would be minor because overall disturbance would be small (414 acres, disturbed in smaller phases) and of short duration. Indirect impacts could include displacement and minor, temporary loss of habitat. Many of these species have high reproductive potential and are common in surrounding habitats. Any population losses would be restored within one or two reproductive seasons (Western 1991). Construction-related direct and

indirect impacts to other mammals would be minor and of short duration. Operational impacts would be negligible because only 0.9 acres of habitat would be lost and only limited traffic would occur on the ROW.

Raptors – If transmission line construction occurred adjacent to an active raptor nest, it is likely that individual production would be lost for that year, as this would constitute an adverse impact and a violation of the Migratory Bird Treaty Act. Western would conduct a raptor nest inventory each year prior to construction and would implement mitigation (avoidance, screening, timing of construction) to prevent the project from disrupting any active nests. To minimize the potential that raptors feeding on carrion could be killed by construction traffic, Western would move any road-kills away from project roads, in consultation with the state game agency. Construction-related impacts, therefore, would be low to none and of short duration. During operation, raptors may be susceptible to power line strikes (Olendorff and Lehman, 1986; Thompson, 1978). Collisions are expected to be rare events, so impacts from collisions would be minor but would persist for the life of the transmission line. Western would implement Standard Construction and Mitigation Practice 33 (Table 2.1-3), to eliminate the potential for raptor electrocution.

To mitigate the potential of future raptor collisions at the Rock Creek crossing, Western will install bird flight diverters at the Rock Creek crossing on both the rebuilt CH-MM transmission line and the existing HJ-MM transmission line (Mitigation Practice 33 - Table 2.1-3).

Upland Game Birds – Direct impacts to greater sage-grouse could include mortality due to collisions with vehicles or power lines, but this is expected to be a rare event and should not adversely affect grouse populations. Raptors may use structures as perches from which to hunt greater sage-grouse. Since this is a rebuild project, resident greater sage-grouse should be familiar with the transmission line and raptors already have perches from which to hunt. Indirect effects would include declines in nesting success if construction occurs in nesting habitat during the nesting season. There are 22 leks within 2.0 miles of the CH-MM ROW, so about 23 miles of the ROW are potential nesting habitat; Western would avoid construction in nesting habitat during the nesting season or would conduct nest surveys prior to construction each year and avoid any active nests. Other indirect effects would include temporary loss of up to 414 acres of habitat (to be disturbed in smaller phases), but given the extent of existing habitat, this temporary habitat loss should cause minimal impacts to greater sage-grouse. Western would reclaim all disturbed areas as soon as practical after construction each year, and while habitat impacts would be minimal they would be long-term because sagebrush reestablishment is typically a long-term process.

Impacts to greater sage-grouse during operations could include minor, short-term disruption of nesting grouse due to vehicles on the ROW or access roads. Since this is a rebuild project, the types of operational activities that have been occurring would continue at similar levels.

Columbian sharp-tailed grouse would not likely be impacted because they are rare visitors to the ROW, and mourning doves may be directly impacted due to collisions with vehicles or power lines, but these are expected to be rare events and would not impact mourning dove populations over the life of the project. Indirect effects of habitat loss in shrub-covered areas along perennial water courses and washes would be minimal. In summary, impacts to upland game birds would be minimal, but potential for mortality and the time required for sagebrush re-establishment would be long-term. Operational impacts to Columbian sharp-tailed grouse and mourning dove would be minor and long-term, occurring at levels similar to current levels.

Other Birds – Impacts to both resident and migrant birds (e.g., passerines, waterfowl, shorebirds, waders) could occur from mortality associated with collisions with vehicles and power lines. Collision potential is dependent upon variables such as habitat type, line orientation to migratory flyways and foraging flight patterns, numbers of migratory and resident bird species, species composition and familiarity with the area, visibility, types of disturbance, and line design (Beaulaurier et al., 1982; Anderson, 1978). Since this is a rebuild project, the transmission line is already part of the landscape, and the rebuilt line would not pose risks to birds above and beyond current conditions, except possibly during construction (collisions with construction vehicles). Some mortality is likely to occur but is not expected to adversely impact any bird populations. Ground-disturbing activities during the nesting season could result in the inadvertent destruction of nests, but since disturbance would be small relative to the amount of potential nesting habitat, the potential for adverse impacts is minor. Impacts of operations are expected to be minor.

Fisheries – Direct impacts to fish could occur if a spill occurred in any of the ROWs perennial waters; however, the potential for direct effects is low to none because construction equipment would be fueled at least 500 ft from perennial waters and Western would implement their SPCC Plan for all spills. Indirect impacts to fish could occur if surface water flows are diminished or if erosion from disturbed areas causes sedimentation in perennial waters. No surface water use is proposed, so streamflows would not be affected. Western would implement Standard Construction and Mitigation Practices 10, 11, 12, 13 (Table 2.1-3) to minimize erosion and sedimentation in streams. Operations would not impact any surface waters. Impacts to fisheries would be minimal to none and short-term.

Other Species – Amphibians and reptiles may be directly impacted due to collisions with vehicles or inadvertent entrapment in a structure hole, but mortalities are expected to be rare events and would not impact populations of these species. The indirect effects of habitat loss would be minimal because only 414 acres would be temporarily disturbed during construction (to be disturbed in smaller phases), and long-term disturbance would be about an acre. Loss of sagebrush habitat (e.g., for northern sagebrush lizard) would be long-term because sagebrush reestablishment can take many years, but impacts would be minimal because of the sagebrush habitat is abundant along the CH-MM ROW.

Because only minimal disturbance would occur, and because the potential for direct mortality is low, the project would not impact animal genetic or species diversity.

Transmission System - AU-CH Transmission Line Rebuild

Big Game – Direct and indirect impacts to big game along the AU-CH portion of the ROW would be similar to those described for the CH-MM ROW, except that 27.2 miles of pronghorn winter range, 9.2 miles of winter concentration areas, and 22.5 miles of severe winter range would be crossed. No crucial or severe winter range for elk or overlapping crucial winter ranges are present. Western would avoid construction in pronghorn winter ranges during critical winter periods, which would be determined in consultation with the Colorado Division of Wildlife prior to construction each year (Table 2.1-3, Mitigation Practice 25). Impacts to big game along the AU-CH ROW would be minor and short-term.

Other Mammals – Impacts to other mammals along the AU-CH portion of the project would be similar to those described for the CH-MM portion and are expected to be minor and of short duration.

Raptors – Impacts to raptors along the AU-CH portion would be similar to those described for the CH-MM portion. The single pole steel structures proposed from the Cheyenne substation to MP 32.0 would be about 63 ft taller than the existing H-frame structures and the adjacent 230-kV ARH-AU transmission line. The effects of this increased height may alter the potential for collisions with structures or power lines, but any changes are likely to be unnoticeable. Western would implement Mitigation Practice 33 (Table 2.1-3) to eliminate the potential for raptor electrocution.

Upland Game Birds – The potential for impacts to greater sage-grouse from construction and operation of the AU-CH portion of the project is minimal because limited habitat occurs south of Cheyenne. Similarly, impacts to Columbian sharp-tailed grouse would be minor to none because they are rare visitors to the ROW. While mourning doves fly through the area, the lack of shrub-covered areas along perennial water courses and washes would preclude mourning dove nesting and roosting. Impacts to mourning doves are also expected to be minor. Because of the potential for collisions with power lines, potential impacts would be long-term.

Other Birds – Impacts to other birds would be similar to those described for the CH-MM portion of the project, except that the agricultural fields along the southern 17 miles of the AU-CH ROW may attract foraging birds. However, since this is a rebuild project, the existing transmission line occurs in and adjacent to this preferred foraging habitat, and thus the rebuild would not cause impacts above and beyond current conditions. Additionally, single pole steel structures proposed from the Cheyenne substation to MP 32.0 would be 63 ft taller than the existing H-frame structures, which may alter the potential for collisions, but the change would likely be unnoticeable. Impacts to other birds are expected to be minor, while the potential for adverse effects would be the long-term potential for collision-related mortality.

Other Species – Impacts to other amphibians and reptiles would be similar to those described for the CH-MM ROW and would be minor and short-term.

Because only minimal disturbance would occur, and because the potential for direct mortality is low, the project would not impact animal genetic or species diversity.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

The proposed Snowy Range substation is located in shortgrass prairie adjacent to the city of Laramie near a road that is regularly used by heavy truck traffic to access a gravel pit. The area is used by pronghorn antelope that most likely have habituated to relatively high levels of human activity from heavy truck traffic. Potential impacts to pronghorn and other mammals would include collision-related mortality, displacement from the substation location during construction, and loss of about 16 acres of foraging area, but these impacts would be minor because of the high level of activity already at the location. No raptor nests are known to occur within 1.0 mile of the substation location, and no greater sage-grouse leks are known to occur within 2.0 miles, so no impacts to breeding and nesting raptors and grouse would occur. The substation is not expected to be a source for bird strikes and thus would have minimal to no impacts on other birds. Because the area to be disturbed is small (about 16 acres) and because habitat is marginal due to existing human activity, substation construction would have minimal to no impacts on other species. Similarly, because there is already notable human activity in the area, substation operation would only minimally, if at all, impact wildlife.

3.7.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts to wildlife under CH-MM Alternative Route 1 would be similar to those described for the proposed project except that there may be more potential to impact waterbirds because the floodplain of the Laramie River is wider at the CH-MM Alternative Route 1, Part A crossing than at the crossing for the proposed project, which is the same for CH-MM Alternative Route, Part B. Neither route crosses big game crucial winter range, so impacts under CH-MM Alternative Route 1 would be the same as described for the proposed project. Impacts to other mammals would also be the same. No known raptor nests occur along CH-MM Alternative Route 1, and, because Western would survey the project ROW for active raptor nests prior to construction each year and no construction would be allowed near active raptor nests, no impacts to nesting raptors would occur. No greater sage-grouse leks and no wintering habitat are known to occur along the alternative ROW or along the proposed project ROW, so no impacts to greater sage-grouse would occur. Impacts to Columbian sharp-tailed grouse, mourning dove, other birds, except possibly waterfowl, and other species, would also be similar to those described for the proposed project. Impacts to wildlife under CH-MM Alternative Route 1 would be minor and of short duration for all groups except birds, where the potential for collisions would constitute a long-term potential impact.

AU-CH Alternative Route 2

Under Alternative Route 2, impacts to wildlife would be similar to those described for the proposed project, except that this alternative is located in cultivated land where habitat has already been altered. Impacts to wildlife would be minor and of short duration for all groups except birds, for which potential impacts would be long-term but similar to existing conditions because the project would rebuild an existing transmission line.

No Action Alternative

Under the No Action Alternative, no impacts to wildlife, above and beyond those attributable to operation of the existing transmission line, would occur.

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3.8 Special Status and Sensitive Species

3.8.1 Affected Environment

The project area for special status and sensitive species includes the existing and proposed expansion of the project ROW, the substation sites, regional settings and critical habitats.

3.8.1.1 Threatened, Endangered, Proposed, and Candidate Species

The Endangered Species Act (ESA) protects plants and animals listed as threatened, endangered, proposed, and candidate (TEP&C) species and their critical habitats. Based on information obtained from the USFWS (2006; 2005), the species in both Wyoming and Colorado to be addressed in this EA are presented in Table 3.8-1.

Black-footed Ferret – The endangered black-footed ferret is a small weasel-like animal that was once distributed throughout the high plains of the Rocky Mountain and Great Plains regions (Forrest et al., 1985). Prairie dogs are the main food source of black-footed ferrets (Sheets et al., 1972), and few ferrets have been historically collected away from prairie dog colonies (Forrest et al., 1985). The transmission line ROW lies within historical black-footed ferret habitat. Confirmed ferret observations were recorded within 1 mile of the ROW in 1968 and within approximately 4 miles of the line at two separate locations in 1979. After 1979, ferrets were believed to be extinct until a population was found near Meteteetse, Wyoming. Black-footed ferrets were reintroduced in the Shirley Basin between 1991 and 1994. In 1991 two observations of experimental population ferrets were recorded 12 and 16 miles north of the ROW. Much of the transmission line ROW and surrounding areas are within the Shirley Basin/Medicine Bow Black-footed Ferret Management Area, which is divided into Primary Management Zones (PMZs) 1 and 2. PMZs are areas designated by WGFD and the FWS to assist in the management of the black-footed ferret reintroduction effort (WGFD and BLM, 1991). The transmission line ROW intersects the Shirley Basin/Medicine Bow Management Area and PMZ 2.

In Wyoming, prairie dog colonies intersect approximately 23.3 miles of the transmission line ROW (21.0 miles in Carbon and Albany Counties and 2.3 miles in Laramie County), but these are unlikely to be inhabited by ferrets (USFWS, 2004).

Prairie dog colonies along the Colorado portion of the route are potential habitat for black-footed ferrets. In Colorado, prairie dog colonies (potential black-footed ferret habitat) intersect 0.2 mile of the transmission line ROW. These colonies and others within 4.3 miles of the line have not been mapped, nor have any burrow density estimates been made.

In 2005, the reintroduced Shirley Basin black-footed ferret population was estimated to include about 150 black-footed ferrets (personal communication, 2006, with Bob Oakleaf, Wyoming Game and Fish Department). Surveys were also completed in September, 2006, during which 119 ferrets were captured and marked, and, while the WGFD is currently developing the population size estimate, a preliminary evaluation suggests that there may be up to 300 ferrets. Reintroduced black-footed ferrets have not been documented in the vicinity of the CH-MM corridor, and, because WGFD anticipates little potential for impacts from the project, WGFD will not recommend surveys for ferrets along the corridor prior to construction. Furthermore, the black-footed ferret management plan requires the WGFD to remove ferrets from areas where construction projects could impact individuals (WGFD and BLM 1991). Since no ferrets have been documented on or near the corridor, and since it would be incumbent on the WGFD to

remove any ferrets from harms way, the black-footed ferret would not be impacted and it is not discussed further in this EA.

Table 3.8-1. FWS List of TEP&C Species Potentially Occurring on or Affected by the Project ¹

Common Name	Scientific Name	Status ²	Habitat/Location	Potential to Occur Along ROW
Mammals				
Black-footed ferret	<i>Mustela nigripes</i>	E, XN	Prairie dog colonies	WY/CO
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	T (proposed for delisting)	Riparian habitats east of the Laramie Mountains and south of the North Platte River	WY/CO
Critical habitat	--	D	Varying widths (360-394 ft from stream edge) along portions of Cottonwood, Chugwater, and Lodgepole Creeks in Wyoming; no critical habitat has been designated in Weld County, Colorado	WY only
Birds				
Bald eagle	<i>Haliaeetus leucocephalus</i>	T (proposed for delisting)	Found throughout Wyoming	WY, CO
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	Coniferous forests in deep canyons	No
Amphibians				
Wyoming toad	<i>Bufo baxteri</i>	E	Wetlands in Laramie River valley	No
Plants				
Blowout penstemon	<i>Penstemon haydenii</i>	E	Sand dunes south of Ferris Mountains	WY only
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	T	Seasonally moist soils and wet meadows of drainages below 6,500 ft	WY, CO
Colorado butterflyplant	<i>Gaura neomexicana</i>	T	Wet meadows in floodplains	WY, CO
Critical habitat	--	D	Laramie and Platte Counties, Wyoming; Kimball County, Nebraska; and Weld County, Colorado	No
Platte River Species				
Piping plover	<i>Charadrius melodus</i>	T	Downstream on Platte River	No
Interior least tern ³	<i>Sterna antillarum</i>	E	Downstream on Platte River	No
Whooping crane ³	<i>Grus americana</i>	E	Downstream on Platte River	No
Pallid sturgeon	<i>Scaphirhynchus albus</i>	E	Downstream on Platte River	No
Western prairie fringed orchid	<i>Platanthera praeclara</i>	T	Downstream on Platte River	No

¹ FWS (20045, 2006).² E = endangered; XN = experimental nonessential; T = threatened; P = proposed; D = designated.

- ³ Water depletions in the North or South Platte River may affect these species and/or critical habitat in downstream reaches in other states.

Preble's Meadow Jumping Mouse – Preble's meadow jumping mouse (threatened, but recently proposed for delisting, see below) is a small rodent that occurs in low undergrowth consisting of grasses and forbs in wet meadows and riparian ROWs and where tall shrubs and low trees provide adequate cover. It prefers lush vegetation along water courses or herbaceous understories in wooded areas with close proximity to water (Clark and Stromberg 1987; USFWS 2006). A portion of the CH-MM and AU-CH transmission line is located in overall range of the Preble's meadow jumping mouse (USGS 1996).

While no site-specific surveys for Preble's meadow jumping mouse have been conducted along the CH-MM segment, general habitat surveys for sensitive species, including Preble's meadow jumping mouse, within and near the proposed transmission line were conducted by TRC Mariah biologists during various times between December 2002 and August 2004. In addition, based on information from WNDD (2002) and USGS (1996), it was determined that the proposed CH-MM segment would likely cross several areas that provide suitable habitat for the Preble's meadow jumping mouse.

The Colorado portion of the AU-CH transmission line segment is also located within the overall range of the Preble's meadow jumping mouse; however, according to the CDOW, the closest occupied range is approximately 4 miles west of the existing/proposed transmission line (CDOW 2006). During the 2004 general habitat surveys conducted by TRC Mariah biologists (certified to conduct Preble's meadow jumping mouse surveys), a single 14-acre parcel of potential Preble's meadow jumping mouse habitat was identified within the project area.

In January, 2005, the FWS determined that the Preble's meadow jumping mouse should not be classified as a separate species of meadow jumping mouse and has begun the process to formally delist it (FWS 2005). Before the rule is finalized, the FWS would evaluate threats to the meadow jumping mouse in all or a significant portion of its range. Until a determination is made in the future (2006 or beyond), the Preble's meadow jumping mouse will continue to be protected under the ESA.

In addition, the ROW crosses proposed critical habitat at Lodgepole Creek (MP 119) and North Lodgepole Creek (MP 118, two crossings). No critical habitat has been designated in Weld County in Colorado.

Several existing transmission line structures are currently located within the 100-year floodplains (based on FEMA maps) (Department of Housing and Urban Development, 1986; FEMA, 1991, 1994) of various drainages that are potential habitat and proposed critical habitat (Table 3.8-2).

Table 3.8-2. Existing Structures Known to be Located or Possibly Located in Potential Preble's Mouse Habitat

Milepost (Structure Number)	Drainage
<i>Known to be located in potential habitat</i>	
119 (114-7) ¹	Lodgepole Creek
117, 118 (113-5, 114-5) ¹	North Lodgepole Creek
127, 128 (123-3, 123-8)	North Fork Crow Creek
130, 131 (126-3, 126-4, 126-5, 126-6)	South Crow Creek
134, 135 (130-3, 130-10)	Tributary to Crow Creek
<i>Possibly located in potential habitat</i>	
112 (107-9, 107-10)	Meadow Fork Branch of Horse Creek
106, 107 (102-4, 102-5)	Horse Creek
124 (120-4, 120-5)	Unnamed drainage
125 (121-3, 121-4)	Unnamed drainage

¹ Proposed critical habitat.

Bald Eagle – Bald eagles (threatened) occur throughout Wyoming and Colorado (see also Section 3.7.1.3). Bald eagles require cliffs or large trees associated with concentrated food sources (e.g., fisheries, waterfowl concentration areas) or sheltered canyons for nesting or roosting areas (Edwards, 1969; Snow, 1972; Call, 1978; Steenhof, 1978; Peterson, 1986). The lack of such habitat along the ROW limits its suitability for nesting or roosting habitat, except near Seminole Reservoir and near the Little Laramie River. One nest is known to occur along the ROW, at the confluence of the Little Laramie and Laramie Rivers. No roosts are known to occur within 1.0 mile of the transmission line ROW, but it is possible that bald eagles use trees and cliffs adjacent to the major drainages along the route as winter roosting and/or perching sites. Bald eagles have been observed nesting and roosting along the North Platte River southwest of the ROW, and migrating bald eagles and those nesting and roosting along the North Platte River may occasionally cross the line or perch on structures.

Mexican Spotted Owl – Mexican spotted owls (threatened) generally nest in closed canopy forests and rocky canyons and it will nest in stick nests built by other birds, on debris platforms in trees, and in tree cavities. Northern Colorado is the northern limit of potential range for the Mexican spotted owl (CDOW 2006). It does not occur in Wyoming and there have been no sightings in the state (WGFD 2004b). The CDOW has modeled potential habitat in northwestern corner of Weld County, but no habitat occurs on or near the project corridor. Mexican spotted owl would not be affected by the project and is not discussed further in this EA.

Wyoming Toad – Wyoming toad (endangered) is known to inhabit two wetland areas in the Laramie River watershed; however, the project is over 12 miles from Hutton Lake and over 14 miles from Mortenson Lake, the two areas with Wyoming toad populations. Therefore, the project would not impact this species (Erwin, USFWS, 2004), and it is not discussed further in this EA.

Blowout Penstemon – Blowout penstemon (threatened) is a potential resident in “blowouts” – sparsely vegetated depressions in active sand dunes created by wind erosion that typically form on windward sandy slopes where the vegetation has been removed or disturbed. Currently the species is primarily found in western Nebraska and in northwestern Carbon County in Wyoming (Fertig 2002a). It is not likely to be found in Colorado. No suitable habitat occurs along the transmission line corridor; therefore, blowout penstemon would not be affected by the project and it is not discussed further in this EA.

Ute Ladies'-Tresses – Ute ladies'-tresses (threatened) is a perennial, herbaceous orchid known to occur throughout southeastern Wyoming in suitable habitat (Fertig, 1994). This species grows along streams, rivers, ponds, reservoirs, wetlands, and other riparian areas that occur at intervals along the entire route. This species has only four occurrences in Wyoming, in northwestern Converse, southeastern Niobrara, southwestern Goshen, and north-central Laramie counties (Fertig 2000b). The closest occurrence of Ute ladies'-tresses to the project area was recorded in north-central Laramie County, about 30 miles north of the proposed ROW. Occurrences of Ute ladies'-tresses have been documented in Larimer County, approximately 30 miles west of the proposed ROW (Spackman, 1997). Project area drainages and wetlands may provide suitable habitat for this species.

Colorado Butterflyplant – This threatened plant species is a potential resident of subirrigated alluvial level or slightly sloping floodplains and drainage bottoms at elevations of 5,000 to 6,400 ft. Colonies are often found in low depressions or along bends in wide meandering stream channels. Known populations of this species are restricted to approximately 1,700 acres of habitat in Laramie County, Wyoming, western Kimball County, Nebraska, and Weld County, Colorado. In Wyoming, a predictive distribution model was prepared for Colorado butterflyplant by the Wyoming Gap program, and, according to the predictive model, the CH-MM segment crosses approximately 13 segments of potential Colorado butterflyplant habitat. The AU-CH segment is also located within the overall range of the Colorado butterflyplant (USFWS 2006). During field surveys, a 14-acre parcel of potential Colorado butterflyplant habitat occurs approximately 13 miles north of the Ault substation.

Platte River Species – These species (threatened or endangered) occur in the Platte River system downstream from the project area, and do not occur along the ROW.

3.8.1.2 Sensitive Species

A list of sensitive species along the route (Appendix B, Table 3.8) was obtained from the following sources:

- the U.S. Fish and Wildlife Service (FWS, 2005, 2006);
- BLM's list of sensitive species (BLM, 2002a);
- the Wyoming Natural Diversity Database (2004);
- the Colorado Natural Heritage Program (2004); and,
- the Colorado Division of Wildlife (2004).

The transmission line ROW contains potential habitat for 160 sensitive species (Appendix B, Table 3.8), and most of the line may provide habitat for one or more of these species.

3.8.2 Environmental Consequences and Mitigation Practices

3.8.2.1 Significance Criteria

Impacts to special status and sensitive species would be significant if effects from transmission line construction or operations, such as loss of individuals or long-term loss of habitat for federally listed species, result in any of the following:

- "jeopardy" Biological Opinion under Section 7 of the ESA;
- impacts to BLM-sensitive species;
- impacts to state-listed species;

- a population reduction in a vulnerable species that could result in its listing as Federal threatened or endangered.

3.8.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

The CH-MM portion of the project may affect but is not likely to adversely affect Preble's meadow jumping mouse. The project would not adversely modify critical habitat. Construction traffic would traverse potential habitat, and thus there is remote potential for mouse mortality due to collisions with vehicles. Removal of existing structures located within known habitat or potential habitat could cause mouse mortality and temporary habitat loss. As part of the proposed project, however, Western would implement Mitigation Practice 22 (Table 2.1-3), which would entail conducting an inventory to determine if any existing structures occur in potential Preble's habitat. These structures would be cut off at ground level to avoid disturbing Preble's habitat. Potential Preble's meadow jumping mouse habitat would be spanned, and construction traffic would avoid driving on designated critical habitat. The project would have negligible indirect effects on Preble's meadow jumping mouse critical habitat because no topsoil would be removed or salvaged so no soil or vegetation would be impacted in mouse habitat. Western would also implement Mitigation Practice 35, which provides for unanticipated discoveries of any T&E species.

Depending on if and when Preble's is delisted in 2006 or beyond, there may not be a requirement for the above-referenced inventory or mitigation to avoid disturbing Preble's habitat. Western would monitor Preble's status and, if necessary, conduct surveys and implement mitigation to ensure project compliance with the ESA.

Western would survey the ROW for bald eagle nests prior to construction each year. Construction would not be allowed within 1.0 mile of any active bald eagle nest until the chicks have fledged or the nest fails (Mitigation Practice 36 – Table 2.1-3). Western would also remove carrion from project access roads (see Section 3.7.2.4), and implement Mitigation Practices 33 and 37 (Table 2.1-3). With these mitigation measures, bald eagles would not be impacted by construction. During operation, bald eagle mortality due to collisions with structures or power lines would constitute an adverse effect but it would not be any more likely for the CH-MM rebuild than for the existing transmission line. Bald eagles may be affected but are not likely to be adversely affected by the project. The increase in structure height is not expected to increase risk of collisions.

The project may affect but is not likely to adversely affect Ute ladies'-tresses. During construction, impacts to Ute ladies'-tresses could include inadvertent loss of individual plants due to surface-disturbing activities or vehicular traffic. During operations, traffic in potential Ute ladies'-tresses habitat could cause the inadvertent loss of individuals. Most Ute ladies'-tresses habitat would be spanned by the transmission structures, so potential for impacts is low. Western would implement Mitigation Practice 23 (Table 2.1-3) to avoid and minimize potential impact to the Ute ladies'-tresses. Prior to disturbing any potential Ute ladies'-tresses habitat, Western would survey possible traffic-ways and all areas to be disturbed for Ute ladies'-tresses and, if any are found, would consult with the FWS to determine what actions are necessary to avoid or minimize impacts to Ute ladies'-tresses (Mitigation Practice 35 – Table 2.1-3). During operations, traffic in potential Ute ladies'-tresses habitat would be restricted to existing roads.

During construction, impacts to Colorado butterflyplant could include inadvertent loss of individual plants due to surface-disturbing activities or vehicular traffic. Operations traffic in known or potential Colorado butterflyplant habitat would also be restricted to existing roads (Table 2.1-3, Mitigation Practice 26). The CH-MM portion of the project would not affect Colorado butterflyplant. Western would also implement Mitigation Practice 35, which provides for unanticipated discoveries of any T&E species.

No direct impacts to Platte River species would occur.

In 2002, the FWS prepared a biological opinion in its *Revised Intra-Service Section 7 Consultation for Federal Agency Actions Resulting in Minor Water Depletions to the Platte River System* (FWS 2002). The biological opinion covers any Federal actions other than wetland restoration projects that result in average annual depletions of 25 acre-ft or less to the Platte River system, regardless of location within the basin. The effects analysis and conservation measures apply only to Federally listed species, designated whooping crane habitat, and proposed critical habitat for the piping plover along the Platte River in Nebraska.

For the CH-MM and AU-CH project, the only water use anticipated would be for soil compaction during construction of the Snowy Range substation. Compaction water would be obtained from the Laramie municipal water, which comes from the Laramie River and the Casper formation. The amount of water to be used is currently unknown but would be less than 25 acre-feet; however, any amount of water taken from the Platte River system for use on this project would be considered a depletion and would require section 7 consultation with the USFWS. Therefore, once the amount of water is known, Western would initiate consultation with the FWS on that amount.

In accordance with the above-referenced biological opinion, “Federal agencies should continue to conclude that each action resulting in a depletion of 25 acre-feet or less per year to the Platte River system may adversely affect the whooping crane, interior least tern, piping plover, and/or pallid sturgeon, designated whooping crane critical habitat, and proposed piping plover critical habitat” (FWS 2002). No mitigation is required because the U.S. Forest Service and the FWS have provided funds to the Fish and Wildlife Foundation account for the purposes of offsetting the adverse effects of Federal agency actions resulting in minor water depletions, such as the CH-MM and AU-CH project.

While the CH-MM ROW provides habitat for many BLM-sensitive and WNDD-tracked animal species, the project is not likely to cause any species to be petitioned for listing as threatened or endangered; greater sage-grouse and mountain plover are specifically mentioned below because of the elevated status of these two sensitive species. The FWS was petitioned to list the greater sage-grouse, but in January 2004 determined that listing was not warranted. Transmission lines are not thought to be a primary factor in their decline and the project is not likely to affect the populations of any of these species (see Transmission System - CH-MM Rebuild, above). Mountain plover was proposed for listing until 2003, when the FWS decided not to list it, but because of this previously elevated status, the BLM is requiring pre-construction surveys in potential habitat.

Potential mountain plover habitat is widespread along the CH-MM ROW, and it is likely that mountain plover are nesting along the ROW. Possible impacts include potential for mortality due to collisions with vehicles or inadvertent destruction of nests by vehicles, and from collisions with structures and power lines. Collisions with vehicles and nest destruction would be rare events unless a high density of mountain plover is nesting along the ROW. BLM would likely

require pre-construction surveys for nests, and nests would be avoided, so potential for impacts to nesting plover would be minimal. Potential for collisions with structures and power lines is also low, and since this is a rebuild project, this potential would be no greater than under current conditions. Habitat would be disturbed and some mountain plover may be displaced during construction; however, the amount of disturbance (less than 414 acres) scattered over 140 miles is small relative to the abundant adjacent similar habitat types, and temporary loss of habitat would have a minor impact. The duration of impact would be temporary.

Other BLM-sensitive and WNDD-tracked species are discussed in general, rather than by species or group, because the project is likely to cause only minor impacts to any species and because none are proposed for listing or were recently down-listed. Possible impacts include potential for mortality (due to collisions with vehicles for the ground-dwelling species and due to collisions with structures and power lines for the birds and bats). Collisions with vehicles would be a rare event and would occur temporarily during each construction season. Potential for collisions with structures and power lines is also low, and since this is a rebuild project, this potential would be no greater than under current conditions. Habitat would be disturbed and some animals may be displaced during construction; however, the amount of disturbance (414 acres) is small relative to the abundant adjacent similar habitat types, and, unless adjacent habitats are fully occupied, the temporary loss of habitat would have a minor impact. Furthermore, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. Vegetation removal during the nesting season could inadvertently destroy the nests of sensitive bird species; however, since the overall disturbance area is small, the impacts to nesting birds are expected to be minor. The duration of impact would be temporary to all species except for the sage obligates (greater sage-grouse, Brewer's sparrow, sage sparrow, and sage thrasher), where habitat loss impacts would persist until sagebrush is restored. It is anticipated that grassland and riparian vegetation that is disturbed would regenerate quickly. Transmission line operation could result in animal-vehicle collisions and would likely result in some mortality of sensitive birds or bats, but since this is a rebuild project, the level of effect would not be any greater than under current conditions, which has not resulted in the listing of or the petition to list any species.

Impacts to BLM-sensitive and WNDD-tracked plant species could include loss of individuals during ground-disturbing activities or vehicular traffic. Because the project footprint is small (414 acres) and because traffic would be limited to the ROW and designated roads, potential for sensitive plant loss is low. The ROW does not contain any known localities or concentrations of sensitive plants or sensitive plant communities (WNDD, 2004). Impacts to BLM-sensitive and WNDD-tracked plants would be minor and of short duration for all species except that inhabit sagebrush communities, where impacts could be long-term.

Transmission System - AU-CH Transmission Line Rebuild

Impacts to Preble's meadow jumping mouse along the AU-CH portion of the ROW would be similar to those described for the CH-MM ROW except that no designated critical habitat for Preble's meadow jumping mouse occurs along the AU-CH ROW. Potential habitat occurs along the streams, but these streams would be spanned by the project. Prior to construction, Western would conduct an inventory to determine if any existing structures occur in potential Preble's habitat; these structures would be cut off at ground level to avoid disturbing Preble's habitat (Mitigation Practice 22, Table 2.1-3). The AU-CH portion of the project would not affect Preble's meadow jumping mouse.

Impacts to bald eagles along the AU-CH portion of the ROW would be similar to those described for the CH-MM ROW. The single pole steel structures proposed from the Cheyenne substation to

MP 32.0 would be about 63 feet taller than the existing H-frame structures and the adjacent 230-kV ARH-AU transmission line. The effects of this increased height may alter the potential for collisions with structures or power lines, but any changes are likely to be unnoticeable. The AU-CH portion of the project may affect but is not likely to adversely affect bald eagles.

Impacts to Colorado butterflyplant and Ute ladies'-tresses along the AU-CH ROW would be similar to those described for the CH-MM ROW. The AU-CH portion of the project may affect but is not likely to adversely affect Colorado butterflyplant or Ute ladies'-tresses. Implementation of Mitigation Practices 23, 26, and 35 (Table 2.1-3) would minimize any potential impacts.

Impacts to Colorado state-listed threatened, endangered, and candidate and WNDD-tracked species along the AU-CH ROW would be similar to those described for BLM-sensitive and WNDD-tracked species along the CH-MM ROW.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne, and Ault Substation Modifications

There is no potential habitat for any of the TEP&C species at the substation sites; therefore, construction of the proposed Snowy Range Substation would not impact Preble's meadow jumping mouse, Colorado butterflyplant, or Ute ladies'-tresses habitat, and thus these species would not be affected. Bald eagles may occasionally fly through the area but would not be affected by substation construction. Modifications to the Miracle Mile, Cheyenne, and Ault substations would occur within the existing fenced areas and thus would not affect any federally listed TEP&C species.

The substation site is not known to support any BLM-sensitive or WNDD-tracked species (WNDD, 2004), so no impacts to these species are anticipated due to substation construction.

3.8.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Colorado butterflyplant does not occur west of the Laramie range and thus impacts to this species under CH-MM Alternative Route 1 would be the same as for the proposed project. CH-MM Alternative Route 1 Part A, crosses a wider riparian area and possibly more Preble's meadow jumping mouse and Ute ladies'-tresses habitat at the Laramie River crossings for Part A and B, compared to the proposed project, but with additional habitat mapping and pre-construction surveys (Project Specific Mitigation Measure 23 – Table 2.1-3), Preble's meadow jumping mouse and Ute ladies'-tresses would not be affected by CH-MM Alternative Route 1.

CH-MM Alternative Route 1 crosses similar habitat types as the proposed project and thus impacts to BLM-sensitive and WNDD-tracked species would be similar to those described for the proposed project, except that the alternative has the potential to impact more of the Laramie River floodplain (and its associated species) than the proposed project. Western would minimize disturbance within this floodplain regardless of the alternative selected; therefore, impacts to BLM-sensitive and WNDD-tracked species would be minor and of short duration.

AU-CH Alternative Route 2

Impacts to federally listed TEP&C species and Colorado state-listed threatened, endangered, and candidate species along Alternative Route 2 would be similar to those described for the proposed project.

No Action Alternative

Under the No Action Alternative, no impacts to federally listed TEP&C species, BLM- sensitive or WNDD-tracked species, or Colorado state-listed threatened, endangered, or candidate species would occur.

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3.9 Cultural Resources

Cultural resources are fragile and nonrenewable remains of prehistoric and historic human activity, occupation, or endeavor as reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human history. Cultural resources comprise the physical remains themselves, the areas where significant human events occurred even if evidence of the event no longer remains, and the environment surrounding the actual resource. Because of the sensitive nature of cultural resources, the Technical Report for this project is on file with Western Area Power Administration, Loveland, Colorado and is not included with the EA. Cultural resources site information is protected under the National Historic Preservation Act of 1966 (as amended), Section 304 and under 36CFR800.11(c)).

The National Historic Preservation Act (NHPA) of 1966 and the Archaeological Resource Protection Act of 1979 provide for the protection of significant cultural resources. Section 106 of the NHPA describes the process that federal agencies must follow to identify, evaluate, and coordinate their activities and recommendations concerning cultural resources. Significant cultural resources are defined as those listed on, or eligible for listing on, the National Register of Historic Places (NRHP). Significant cultural resources are generally at least 50 years old and meet one or more of the criteria presented in 36CFR60. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and, (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history.

Prehistoric cultural resources are generally evaluated with respect to criterion d, which pertains to a site's potential for yielding scientifically valuable information. The measure of the importance of the scientific data is based upon research questions widely recognized as appropriate by the scientific community. Sites most likely to yield these important data are those with intact cultural deposits, where artifacts and features are relatively undisturbed. In addition to retaining contextual integrity, sites with the highest research value are those likely to contain cultural features. Features such as hearths, storage or habitation structures, or living structures often yield charcoal for radiocarbon dating; macrobotanical, palynological, and faunal evidence of subsistence practices; and associated datable artifact assemblages. Sites with artifacts diagnostic of a particular temporal period or cultural group are also regarded as having higher research potential than those lacking diagnostic artifacts. Sites attributable to a specific unit can be used to address specific research questions and are regarded as important resources.

Historic sites can potentially meet any of the four criteria for eligibility to the NRHP. Frequently, however, the focus is upon architectural significance or association with events or individuals of historical importance. Although site-specific historical research is often warranted after a site is identified to determine whether it was associated with an important individual or event, a site's value as an archaeological resource should not be overlooked. When considering a historic site's archaeological value, the condition or structures or burial of cultural deposits are not as important as whether information exists on the site in the form of artifacts or cultural features that can

answer questions of particular interest about the past. Sites that can be confidently ascribed to a particular historic theme and subtheme are generally regarded as having more research value than sites that cannot be ascribed to a theme. Significant historic archaeological resources are those that are relatively undisturbed, can be attributed to a specific theme, and retain sufficient artifacts and features to permit further study. Linear cultural resources such as roads, trails, and ditches generally possess little archaeological value, though in some instances they may retain engineering significance or be associated with important historic events. Roads, trails, and railroad grades, however, may have other historic site types associated with them that are important archaeological resources, the proper interpretation of which may depend upon identification of the linear site.

The significance of traditional cultural properties is usually assessed by talking with elders and other knowledgeable individuals of a cultural group, and through historical documentation. Some traditional cultural properties may be significant to an entire cultural group, whereas others may be significant to an individual or family.

3.9.1 Affected Environment

The project area for cultural resources includes the existing and proposed expansion of the project ROW and the substation sites.

3.9.1.1 Regional Cultural Overview

Human occupation of southeastern Wyoming and northeastern Colorado is known to extend to at least 12,000 years ago. The earliest inhabitants were representative of the Paleoindian stage, which emphasized the exploitation of megafaunal and floral resources during the period of transition from the Pleistocene to the Holocene dating between around 10,000 to 6000 B.C. This stage has traditionally been identified by a number of distinctive, diagnostic lanceolate projectile points and tool assemblages indicative of a big game hunting economy by what have been termed the Clovis, Folsom, and Plano traditions. Beginning around 10,000 years ago, two distinct Paleoindian adaptations emerged on the Northwestern Plains. The plains big game adaptation generally occurred on the open Plains and large intermontane basins. These groups, identified by projectile points known as Hell Gap, Alberta, Cody, Eden, Scottsbluff, and others, focused upon bison, often procured during communal hunts. The foothill-mountains group occupied more rugged, higher elevations at the margins of the Plains, and penetrated into the Rocky Mountains and the Colorado Plateau. These people followed a more diversified subsistence round, procuring deer, bighorn sheep, and pronghorn rather than bison, and perhaps more intensively exploiting floral foodstuffs. The projectile points of the foothill-mountains groups are generally lanceolate forms with concave bases, but also include points with restricted stems, many of which also have indented bases. Both lanceolate and stemmed styles often show parallel-oblique flaking patterns. Projectile point types associated with foothill-mountain Paleoindian groups include Frederick, Lusk, Jimmy Allen, Angostura, Lovell Constricted, and Pryor Stemmed styles. Frison (1991:338) suggests that the artifact assemblages from foothill-mountains groups display greater regional variability than those from open Plains groups, indicating more localized specialization. A well-known Paleoindian site in the general vicinity of the project area, south of Laramie, is the James Allen site (48AB4), the type site for one of the parallel-oblique point styles. On the Colorado side in the vicinity of the project area are the Lindemeier (5LR13), Johnson (5LR26), and Jurgens (5WL53) sites.

Warming of the environment to essentially modern conditions resulted in the end of the Pleistocene and extinction of several large animal species upon which Paleoindian cultures relied. The Plains Archaic stage, which dates between 6500 B.C. and A.D. 500, represents adaptation to

the changing environment, mainly by efficiently focusing on a more diverse subsistence base. It is characterized by the hunting of smaller game and increased dependence upon plant resources. The Archaic stage is characterized by large stemmed or stemmed indented base dart points, large side- and corner-notched projectile point forms, and a diverse tool assemblages, including grinding slabs and hand stones. Archaic features include housepits and firepits with fire-cracked rock. Early, Middle, and Late periods are defined within the Plains Archaic stage. The Early Plains Archaic (ca. 6500 to 3000 B.C.) is associated with the Altithermal climatic episode, during which people hunted small to medium game but few bison. Early Plains Archaic sites in the vicinity of the project area in Wyoming include Medicine House (48CR2353) and the Shoreline site (48CR122), near Seminoe Reservoir, which contained housepits. The Wilber Thomas rockshelter (5WL45) in Colorado contained multiple components, including an Early Plains Archaic occupation. The Middle Plains Archaic (ca. 3000 to 1500 B.C.) follows the Altithermal. The climate became wetter. Bison hunting resumed its importance, but a wide range of plants and animals were exploited. The Middle Plains Archaic is synonymous with the McKean complex, named after the type site in northeastern Wyoming. Sites from the Middle Plains Archaic period are numerous and include the Scoggin site (48CR304), a bison kill site a few miles west of Seminoe Reservoir, the Dipper Gap site (5LO101) and Spring Gulch site (5LR252) on the northeast plains of Colorado. Late Plains Archaic (ca 1500 B.C. to A.D. 500) sites are also widespread. North of the project area, at the south edge of the Shirley Basin, is the Muddy Creek site (48CR324), a stone circle and bison kill site.

The final prehistoric stage is known as the Late Prehistoric stage of the Northwestern Plains, which dates from A.D. 500 to European contact. It is marked by the appearance of the bow and arrow. The presence of ceramics at some Late Prehistoric sites suggests contact with the Woodlands culture. Subsistence focused on communal bison hunts as well as other game hunting and collection of wild foods. Late Prehistoric sites in the vicinity of the project area in Wyoming include the Willow Springs Buffalo Jump site (48AB30); the John Gale site (48CR303) west of Seminoe Reservoir; and the Shirley Basin site (48AB301) to the north. Ceramics are present at the John Gale site. Stone circle sites, which first appeared in the Late Archaic, are the most visible feature in the Late Prehistoric. These stones were probably used to hold down skin coverings of conical pole structures (i.e., tipis). Late prehistoric sites in the vicinity of the project area in Colorado include the Biggs sites (5WL7, 5WL27) and the Agate Bluff sites (5WL1478, 5WL1479, 5WL1481), all of which contained ceramics; and the late component at Wilbur Thomas rockshelter.

The Protohistoric period begins with the introduction of the horse in the early eighteenth century. European trade goods are common at Protohistoric sites. Modern tribes known to have inhabited southeastern Wyoming and northeastern Colorado during the period of initial European contact include the Arapahoe, Cheyenne, Comanche, Shoshone, and Sioux.

Beginning in the late 1600s or early 1700s, the French and Spanish were in competition for influence in, if not control of, the eastern portion of the project area. French trappers and traders were operating in southeastern Wyoming and northeastern Colorado, and Spanish military expeditions were formed as early as 1717 in attempt to evict the French, reaching the juncture of the Platte Rivers by 1720. This situation continued, with French traders working in the area until at least the 1760s, and Spanish troops patrolling the plains until the early 1800s. By 1818 Euroamericans out of St. Louis were trapping beaver in what were to become Colorado and Wyoming, traveling along the Platte and South Platte Rivers. In the 1830s two permanent trading settlements, Fort Lupton and Fort Vasquez were established along the South Platte, and a year later Fort Jackson and Fort St. Vrain were built nearby. By the mid-nineteenth century, several established emigrant routes traversed Wyoming from east to west, including the Oregon,

Overland, and Mormon Trails. Several trading posts and military outposts were constructed in the vicinity, including Fort Laramie and Fort William in southeastern Wyoming. Stagecoach routes were established across Wyoming by the 1850s, and the following decade marked the advent of the Pony Express and transcontinental telegraph lines. In 1858, following the discovery of gold at Cherry Creek in Colorado, large numbers of Euroamericans began to pass through northeastern Colorado on their way to the gold mining areas near Denver, Cripple Creek, and Black Hawk, generally traveling along the South Platte, well to the southeast of the project area. The discovery of gold in 1867 in what became known as the Sweetwater Mining District, Wyoming, led to the creation of mining towns such as Atlantic City and South Pass City near present-day Lander. The gold mining boom was short-lived, essentially ending five years later. By 1875, less than 100 people lived in the area. Beginning in the 1880s, the mining of coal, gas, and oil became the important mineral industries and continue to be so today.

The transcontinental Union Pacific Railroad crossed Wyoming in 1868, leading to the founding of the city of Cheyenne that same year. Trails and roads in the vicinity of the project area include the Ft. Laramie to Ft. Halleck freight road, the Ft. Fetterman Road, the Denver to Ft. Laramie Road, the Camp Walbach to Ft. Laramie Road, the Cheyenne to Cheyenne Pass Road, the Union Pacific Railroad, and the Cheyenne-Northern Railroad.

Cattle and sheep industries boomed following the construction of the railroad. The Carey Act of 1894 provided aid for irrigation projects and opened arid lands to farming. Land reclamation intensified following the 1902 Newlands Act, which funded the construction of canals and reservoirs. Historic ditches and canals, homesteads, and ranches are common in the project area.

3.9.1.2 Class I Inventory

In order to assess potential impacts to significant cultural resources in the project area, a Class I inventory (site file search) for the Wyoming portion of the project was conducted at the Wyoming Cultural Records Office, (WYCRO), Laramie, Wyoming, and at the BLM, Rawlins Field Office, Rawlins, Wyoming. For the Colorado section, a site file search was conducted at the Office of Archaeology and Historic Preservation (OAHP) and General Land Office (GLO) records were checked at the Colorado State BLM office in Denver. Locations of previously recorded sites and historic sites shown on GLO maps within ½ mile of the project ROW and access roads were plotted on project maps, and the following site data were compiled: site type, cultural affiliation, and NRHP status. The National and State Registers of Historic Places for Carbon, Albany, and Laramie counties in Wyoming and Weld County in Colorado were checked to identify cultural properties listed to date. The Class I research results are a direct reflection of previous cultural resource investigations; i.e., little or no site data exist for those portions of the project area that have not been previously inventoried.

Numerous cultural resource inventories have been conducted within or adjacent to the project area. The inventories include block inventories for land exchanges and leases and linear projects such as seismic lines, fiber optic lines, power lines, and pipelines. Cultural resource inventories have been conducted in advance of development and exchange of land managed by the BLM.

3.9.1.3 Class III Inventory

An intensive (“Class III”) cultural resource inventory was initiated by Alpine Archaeological Consultants, Inc. in the fall of 2003, but was not completed because of the onset of winter weather. The inventory of the CH-MM and HJ-MM sections was completed in the spring of 2003, and the AU-CH section in the summer of 2004. The inventory of 179.92 linear miles of transmission line ROW and 93.2 linear miles of access roads recorded 63 sites in the project area,

including 25 previously recorded sites and 38 new sites. The following types and quantities of sites were recorded: 34 historic Euroamerican sites, 26 prehistoric sites, and three sites with both prehistoric and historic components. Twenty sites are officially eligible or have been recommended eligible for the NRHP, and 42 sites have been recommended not eligible for the NRHP. New materials documented at one site, officially designated not eligible in 1998, led Alpine to recommend it as eligible.

3.9.1.4 Native American Consultation

Western contacted Native American tribes with a potential interest in the project, and historical ties to the project area, to inform them of the proposed project and request any comments or information they would like to provide. A letter was sent to the tribes on December 9, 2002. (see Appendix D).

3.9.2 Environmental Consequences and Mitigation Practices

3.9.2.1 Significance Criteria

Impacts to cultural resources that are caused directly or indirectly by project activities would be significant only if:

- they occur to a cultural resource that is considered eligible for or is listed on the National Register of Historic Places (NRHP). As discussed above, sites are evaluated for the NRHP in regard to their research value and tangible links to important persons or historical events. Disturbance to eligible or listed resources, referred to as historic properties, is an adverse effect, and should be avoided or the adverse effects mitigated.

3.9.2.2 Impacts of the Proposed Project

Twenty-one sites encountered during the archaeological survey for the project are considered to be eligible for nomination to the NRHP, and potential impacts to those historic properties are evaluated in the following sections. Three types of direct impacts have been identified in association with this undertaking:

1. removal of existing transmission structures;
2. construction of transmission structures; and,
3. use and maintenance of access roads.

Rebuilding and/or upgrading existing transmission lines can result in several types of ground disturbance, many of which have the potential to impact cultural resources. Regardless of new structure placement, the removal of aging in-place transmission structures can cause impacts to cultural resources. These impacts are primarily caused by vehicular traffic to and around the existing structure for excavation and removal of the structure itself, and gathering of materials to recontour the landscape. Project impacts can be minimized by limiting vehicular access to rubber-tired vehicles and finding alternate structure removal schemes.

Construction and installation of new transmission structures also cause ground disturbance, and thus can impact significant cultural deposits. These impacts originate not only from excavation for structure construction, but from construction/excavation equipment or vehicles and disposal and/or dispersion of excavated earthen materials. Project impacts to cultural deposits can be minimized by re-engineering structure placement off of significant resource locations, use of rubber-tired vehicles, limiting vehicular access, and carefully planned disposal and/or dispersion

of excavated earthen materials. All sites on proposed transmission lines have the potential to be impacted by new structure placement, as specific structure locations have not been identified.

As is the case with any existing transmission system, cultural resources are in danger of destruction and disturbance from the use and maintenance of access roads. Each time a road is used, widened or improved for maintenance activities, direct impacts may occur to cultural resources crossed by that road. Potential direct impacts to cultural resources resulting from periodic use of roads for maintenance activities are the same for all alternatives, including the No Action Alternative. Direct impacts to cultural resources from maintenance activities would be avoided or mitigated to less than significant levels by limiting traffic to the existing and/or improved access roads and at structure sites. Indirect or secondary impacts, resulting from increased access by the general public may also occur if increased access and visibility to resources results in looting and/or artifact collection. Since the proposed project entails replacement and/or upgrading of an existing system and existing access roads that are already in place, these types of secondary impacts are not anticipated.

To address these direct impacts, Western has adopted standard construction, operation and maintenance practices that would avoid and minimize impacts to the environment to the extent practicable (see section 2.1.10). These measures are listed on Table 2.1-3. Practices 29, 30, and 31 are specifically designed to address the direct impacts to cultural resources listed above. Practice 29 calls for cutting existing structures at their base with an archaeological monitor present, rather than excavating buried portions of the structure. Practice 30 calls for avoiding certain potential transmission structure placements to avoid archaeological sites and monitoring activities when close to them. Practice 31 calls for limiting use, upgrading, and maintenance of access roads on or near significant archaeological resources.

In the following sections impacts from structure removal, new structure construction, and access road use will be discussed by project segment.

Transmission System – CH-MM Transmission Line Rebuild

Six prehistoric sites and nine historic sites on the CH-MM section of the project were recommended as eligible to the NRHP. Table 3.9-1 summarizes the potential impacts to each of these properties. The Pioneer Canal (48AB835), the Union Pacific Railroad (48AB358), and the Lincoln Highway (48AB152/48CR1191) are crossed by the CH-MM project area within segments of the sites that are considered to be noncontributing to their eligibility. Impacts to these properties are, therefore, considered to be of no adverse effect and not included in the following impact discussions. Project impacts to the remaining 12 historic properties, however, have the potential to cause adverse effect.

Two of the historic properties in the CH-MM section of the project currently have existing transmission structures within the site boundaries. Removal of these structures has the potential to impact the sites. These impacts would not be significant by implementing Western's Standard Construction and Mitigation Practice 29 (Table 2.1-3).

Eight of the historic properties in the CH-MM section of the project occur along the transmission centerline. Specific structure placements have not been identified and, therefore, each of these sites must be considered at risk for impacts from transmission structure construction. These potential impacts can be avoided by implementing Western's Standard Construction and Mitigation Practice 30 (Table 2.1-3). Site 48CR8036 is eligible under criterion c of the NRHP due in part to its setting; therefore, an assessment of visual impacts is especially important. With

two existing transmission lines crossing the site, replacement of the CH-MM section would not adversely affect the site's setting; however, replacement structure placement still has the potential to impact the site.

Table 3.9-1. Potential Impacts to Sites, CH-MM Transmission Line Rebuild

Site No.	Site type	Owner	Potential Impacts		
			Access Road use and maintenance	Structure removal	New structure construction
48AB1397	Historic homestead	Private			X
48AB1399	Historic homestead	Private	Road 45-2 to 47-3		
48AB1405	Prehistoric	Private	Transmission line road	71-4	X
48AB1408	Prehistoric	Private	Road to 101-3		
48CR8028	Historic homestead	Private	Road to 13-6		X
48CR8031	Prehistoric	Private			X
48CR8033	Prehistoric	Private	Road to 27-2	27-2	X
48CR8034	Prehistoric	BLM	Road to 9-6		X
48CR8036	Historic sheep yard	Private	Transmission line road		X
48CR8041	Prehistoric	Private	Road to 47-1		
48LA484 Cheyenne Northern	Historic railroad	Private			
48LA2789 Denver-Ft. Laramie	Historic road	Private			X
48AB835* Pioneer Canal	Historic Canal	Private and State	Road to 91-7*		X*
48AB358* Union Pacific Railroad	Historic Railroad	Private and State	Road to 79-5* Road to 80-6* Road to 81-5* Road to 81-7* Road to 83-1* Road to 83-6* Road to 85-2*		
48AB152/ 48CR1191* Lincoln Highway	Historic road	Private			X

* Potential project impacts occur in noncontributing sections of these sites

Eight of the historic properties are crossed by project access roads in the CH-MM section. These sites would be impacted by access road maintenance or widening. These potential impacts can be minimized by implementing Western's Standard Construction and Mitigation Practice 30: limited use or archaeological mitigation (Table 2.1-3).

Transmission System – AU-CH Transmission Line Rebuild

Two prehistoric sites and three historic sites on the AU-CH sections of the project were determined officially eligible or were recommended as eligible to the NRHP. Table 3.9-2 summarizes the potential impacts to each of these historic properties. The officially eligible sites are the abandoned Denver Pacific Railroad Grade (48LA1237) and an in-use segment of the Union Pacific Railroad (5WL1969.30) (see Table 3.9-2). Because the historic Union Pacific Railroad grade has been buried or replaced by the modern railroad, the segment of the Union Pacific Railroad crossed by the project is not likely to be adversely impacted by project activities.

Table 3.9-2. Potential Impacts to Sites, AU-CH Transmission Line Rebuild

Site No.	Site Type	Owner	Potential Impacts		
			Access Road use and maintenance	Structure removal	New structure construction
48LA1237 Denver Pacific	Historic Railroad	Private	Road to 64-5		X
5WL2622	Historic homestead	Private	Transmission line road	58-4	X
5WL4830	Prehistoric tipi rings	Private	Transmission line road	57-2	X
5WL4831	Prehistoric tipi ring	Private			X
5WL1969.30* Union Pacific	Historic Railroad	Private			X*

* Potential project impacts occur in noncontributing sections of these sites

Two of the five historic properties in this section would be impacted by all three impact types. The remaining sites lie along the centerline for the section, and may be impacted by new structure construction. One site, the Denver Pacific Railroad Grade (48LA1237) is crossed by an access road. While use of Western's Standard Construction and Mitigation Practices 29 (Table 2.1-3, cut and archaeological monitoring) and 30 (avoid or archaeological monitoring) can mitigate impacts caused by structure removal and construction. The impacts associated with access roads would be mitigated with Mitigation Practice 31 (Table 2.1-3, limited use or archaeological mitigation) or through total avoidance.

Substations – Proposed Snowy Range Substation and Miracle Mile, Cheyenne, and Ault Substation Modifications

No sites were encountered in the proposed location for the Snowy Range Substation, and, consequently, no impacts to cultural resources are anticipated from the construction of the substation.

The proposed modifications to the Miracle Mile, Cheyenne and Ault substations are within the previously disturbed areas around the existing facilities and would not create further impacts to any cultural resources.

3.9.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Three significant sites lie along the segment of the CH-MM Alternative Route 1, Part A (see Table 3.9-3). Site 48AB152, the Lincoln Highway, and 48AB835, the Pioneer Canal, are crossed by CH-MM Alternate Route 1, Part A. In both cases, the segments of these eligible resources within the project area are considered noncontributing portions. Impacts to these sites are, therefore, considered to be of no adverse effect.

If this alternative is chosen, 48AB1395, also known as the Hill Homestead, falls along the proposed centerline. Specific structure placements have not been identified, but any potential impacts can be avoided by implementing Mitigation Practice 30 (Table 2.1-3): avoid or

archaeological monitoring. Because the site is eligible under criterion d of the NRHP, and not based on its setting, and because an existing transmission line exists just off the site, no adverse impacts exist.

Table 3.9-3. Potential Impacts to Sites, CH-MM Alternative Route 1

Site No.	Site Type	Owner	Potential Impacts		
			Access Road use and maintenance	Structure removal	New structure construction
48AB1395	Historic homestead	Private			X
48AB152/48CR1191* Lincoln Highway	Historic Road				
48AB835* Pioneer Canal	Historic canal	Private and State			

* Potential project impacts occur in noncontributing sections of these sites

The CH-MM Alternative Route 1, Part B would also involve rebuilding the HJ-MM 115-kV transmission line along the existing CH-MM ROW (CH-MM Section 3). This would not impact any historic properties.

AU-CH Alternative Route 2

No sites were encountered on the two re-routes that constitute this alternative; consequently, no impacts to cultural resources are anticipated from the construction of either section. The selection of the AU-CH Alternative Route 2 would also involve removal of structures along the segment of the existing transmission line that would be abandoned (portions of AU-CH Section 2). This would not impact any eligible properties.

No Action Alternative

The No Action alternative would result in continued use of the transmission structures and access roads. Natural processes would continue to affect cultural resources, including the transmission line itself, although this alternative eliminates any direct project-related impacts. Continued use of the access roads across eligible sites and any needed maintenance of the roads would have to be considered an adverse effect of the No Action Alternative.

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3.10 Land Use – Existing and Planned

3.10.1 Affected Environment

The approximate 181 miles of the transmission line that would be rebuilt for the proposed project are located in Carbon, Albany, and Laramie Counties, Wyoming and Weld County, Colorado. Jurisdictions with lands affected by the transmission line rebuild include the Bureau of Land Management (BLM), Medicine Bow Divide Resource Area, Rawlins Field Office, Bureau of Reclamation (BOR), Carbon, Albany, and Laramie counties, Wyoming, Weld County, Colorado, the Cities of Laramie and Cheyenne, Wyoming, and other public lands in the State of Wyoming. The proposed rebuild would be located along the existing ROW of the CH-MM and AU-CH115-kV transmission line routes, unless route alternatives are selected. The current use of the project area includes transmission line easements.

The affected environment boundaries include the existing and proposed expansion of the ROWs, the substation sites, land uses that would be visually affected by the transmission line, and land uses that would have indirect impacts related to construction or operation activities (e.g. recreation areas) within 2 miles.

Existing Land Uses

CH-MM Project Area – From the Miracle Mile substation to Cheyenne substation the existing transmission line runs primarily through rural landscapes, except when it passes through the cities of Laramie and Cheyenne, Wyoming. The CH-MM and HJ-MM transmission lines share the same ROW corridor for most of the 146 miles of the CH-MM route. Outside the cities of Laramie and Cheyenne, the predominant land uses within close proximity of the proposed transmission line rebuild include public recreation and designated natural areas, open grazing lands and large ranches.

Recreational use is minimal except near Seminole State Park and Reservoir. Dispersed hunting, fishing, and off road vehicle use on public lands may occur throughout the area. The Bennett Mountains Wilderness Study Area (WSA) is located immediately adjacent to the transmission line near Seminole Reservoir and Seminole State Park, near where the HJ-MM and CH-MM lines are combined on steel lattice structures (MP 3.5 to MP 11). The 6003-acre Bennett Mountain Wilderness Study Area was not recommended for Wilderness status in the 1992 report to Congress. The area is managed to preserve wilderness values until Congress makes a decision to either designate the area as wilderness or to release the area for non-wilderness management. Bennett Mountain Wilderness Study Area has steep rock ledges and several drainages that provide primitive unconfined recreation. Wilderness Area designation would preclude any new development within their boundary.

The five-mile segment of the North Platte River between Kortes Dam and Pathfinder Reservoir is known as the Miracle Mile. This segment has a national reputation as one of Wyoming's best trout fisheries. Primary activities along the 10 miles of shoreline include fishing, hunting, and camping. There are 11 primitive campsites along this stretch of the river, and dispersed camping is allowed throughout the area. The Miracle Mile is heavily used during holidays and weekends during the spring and summer. Spring is the best time to fish the area. In 2001 the estimated number of anglers from March through October was 14,342 (Mavrachas 2004). The Miracle Mile Ranch is the only lodging on the river with cabins and a store.

Most of the private land uses in the Carbon County part of the project area are large ranch properties. Several ranch residences are within close proximity of the line. Cultivated hay meadows are typically found in the draws along the creek beds, when water is available. The landscape is rolling with many draws, rock outcroppings, ridges, and bluffs. Vegetation is primarily sagebrush, rabbit brush and some juniper and pine. Ranch houses are few and far between, giving the area a sense of isolation. Other land uses in Carbon County include small coal bed methane operations near T24R80/81, mining, oil and gas, pipelines, transmission lines, communication corridors, wind energy, and wildlife habitat. The CH-MM transmission line crosses the Medicine Bow River three times in Carbon County.

Within the vicinity of Medicine Bow, Wyoming, an airport landing strip and an REA office building are located in close proximity of the line. There are few rural residences in proximity to the line; however a few ranch homesteads and unpaved landing strips are within view of the line.

From Medicine Bow east into Albany County, the transmission line is almost strictly located on rangeland with little change in topography and miles of open space. The line continues east through the flats and crosses several smaller creeks. Very few ranch residences are near the ROW. As the line approaches Laramie, more urban uses occur. Before the line reaches the Laramie Substation, the line crosses through an irrigated hay meadow, wetlands, an industrial area, near the City of Laramie wastewater treatment plant, and crosses the Union Pacific railroad tracks. The CH-MM line continues through Laramie on a ridge north of several residential subdivisions and the landfill. It continues through the Laramie Mountains, north of the Medicine Bow National Forest, again crossing large tracks of ranchland and enclaves of small acreage rural residential subdivisions. The line passes through a residential area called Gilchrist with a large number of rural residences near State Highway 210 before reaching Little America and Cheyenne.

Entering the City of Cheyenne, the transmission line crosses through a portion of the Little America Hotel and Convention Center, then crosses both I-80 and I-25 before heading through an industrial/office warehouse district. The transmission line then heads east across Parsley St., into an older residential area. The existing corridor is a designated utility corridor for transmission, distribution, and other utility lines (MP 145 through MP 146). Residents in the area store campers, boats, vehicles and other items within the ROW. Goins Elementary School and Johnson Junior High School are in close proximity of the line, but not in the ROW. Other uses in the area include railroad tracks, transportation corridors, commercial uses, and open land area. The Cheyenne substation is located adjacent to the older residential area.

A fair amount of development activity adjacent to or in visual proximity to the transmission line is proposed or under construction, particularly in Cheyenne. In addition, there is some residential development proposed in Laramie just south of the line. Most of the proposed activity is commercial/industrial in nature, with some residential uses currently under development or proposed. The developing and proposed development is discussed in Section 3.15.1 Reasonably Foreseeable Development.

Ault-Cheyenne Project Area – The AU-CH Rebuild project area crosses through mixed commercial, residential, and agricultural land uses. The AU-CH 115-kV transmission line heads south from the Cheyenne Substation through a new residential/office/commercial subdivision (Harmony), which is currently under construction. The line then passes through an older residential subdivision, Orchard Valley, to undeveloped land. After approximately a mile of undeveloped land, the transmission line crosses the Bison Crossing subdivision, which is a larger lot single-family residential development. Many houses are located immediately adjacent to the

transmission line ROW, and some out buildings are actually located on the ROW. The transmission line continues south through the Winchester Hills subdivision, then to open rangeland. Table 3.10-1 shows the Milepost location of the subdivisions most affected.

Table 3.10-1. Location of Residential Subdivisions in Proximity of the AU-CH Transmission Line Rebuild ROW

Subdivision	Milepost	Developed (DD)/ Developing (D)
Harmony Point	MP 0 mile to ¼ mile	D
Harmony	MP ¼ mile to ¾ mile	D
Orchard Valley	MP ¾ mile to 1 mile	DD
Bison Crossing	MP 3 to MP 3 ¾	D/DD
Winchester Hills	MP 3 ¾ to MP 4	DD

Source: Kathol and Company, 2004.

Once outside of Cheyenne, the line crosses primarily agricultural land. From the outskirts of Cheyenne to the Ponnequin wind farm and beyond, land use is open range. Approximately 12 miles east of Cheyenne the Colorado Interstate Gas Company has a large compressor plant just west of State Highway 85 in the vicinity of the transmission line. Just south of Rockport, near MP 17 (starting from the Cheyenne substation), land use changes from open range to cultivated farmland. Lands are cultivated around the transmission lines. Other uses in the vicinity include grazing and goat farming. The terrain is flat with mostly cropland; however, some land has been left fallow in intermittent years.

Farmlands

The Farmland Protection Policy Act protects prime farmland from being converted to non-agricultural uses. The provisions of this act identify prime and unique farmlands for protection. Prime farmlands are those lands that have the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed and other agricultural crops with the minimum of fertilizer, fuel, pesticides, and labor, and without intolerable erosion. Unique farmlands are composed of land other than prime farmland that are used for producing specific high value food and fiber crops (www.nrcs.usda.gov). Although soil characteristics exist for prime farmland in Laramie County, no irrigated land is present, Carbon and Albany counties do not have any designated prime farmland due to the short growing season (Jelden, NRCS, 2004). According to the NRCS in Weld County, CO (Wicky 2004) prime farmland (irrigated) exists along the southern portion of the transmission line corridor, however, for the most part, the transmission line does not interfere with the cultivation of this land.

Land Ownership

Throughout the CH-MM and AU-CH project area numerous electrical transmission lines, pipelines, cellular towers, radio towers and railroads are evident. The line crosses predominately private land (140 miles - 77%). Private land ownership in the area is generally large landowners, operating large ranches. Some sections of state land (11.5 miles - 6.3%) are traversed throughout the project area. The western portion of the line (west of Medicine Bow) crosses intermittent sections of BLM land (29.3 miles - 16.2%), and some BOR land (0.5 miles) near Seminole Reservoir.

Table 3.10-2 shows land ownership and miles of line within the ROW corridor.

Table 3.10-2. Ownership of Lands Crossed by the CH-MM and AU- CH Transmission Line (miles of line)

County	Private	BOR	BLM	State	Water	Total
<i>CH-MM</i>						
Carbon	34.2	0.5	23.2	0.8	0.1	58.8
Albany	45.2		6.1	4.3		55.6
Laramie	29.9			2.1		32.0
Total	109.3	0.5	29.3	7.2	0.1	146.4
<i>AU-CH</i>						
Laramie	7.8		0.1			7.9
Weld County	22.9			4.3		27.2
Total	30.7	NA	0.1	4.3		35.1
Total Both Projects	140	0.5	29.4	11.5	0.1	181.5

Source: Geographics, BLM Wyoming and Colorado State Office

Land Use Regulations

Federal public lands in the project area are managed according to the BLM's Great Divide Resource Management Plan (RMP) 1990. The RMP provides that all public lands be open to utility/transportation systems, and that utility systems be located next to existing facilities whenever possible. The plan would allow flexibility in placement of new utility/transportation systems yet prevent proliferation of new routes. Important and sensitive resource values would be protected by application of the Wyoming BLM standard mitigation guidelines with appropriate restrictions including avoiding high-value lands (BLM 1988). New utilities are discouraged from being built in certain areas. The areas of regulatory concern for the proposed project include the land area in the vicinity of the Seminole and Pathfinder Reservoirs, which include Crucial Winter Range, and Recreation Areas. These areas preclude any utility development. The Bennett Mountain WSA is also adjacent to Western's existing ROW for the HJ-MM transmission line. Utilities and other types of development are not permitted in the WSA.

Land use plans and regulations for private lands in the project area are administered by the counties and cities. The transmission line rebuild is exempt from local land use regulation since the project is a federal transmission line. However, Western prefers to meet the substantive requirements of the local government standards and land use regulations whenever possible. The Land Use regulations which pertain to the transmission line route throughout the project area include the Carbon County Zoning Resolution, 2003; the Albany County Zoning Resolutions, September, 2002; Cheyenne City Code 2002; the Cheyenne and Laramie County Zoning Ordinance 1988, and Weld County Code Ordinance - 2000, 2001, 2002. The existing CH-MM and AU-CH transmission lines currently conform to all applicable land use codes and regulations.

Planned Land Uses and Developments

Section 3.15.1 (Reasonably Foreseeable Projects) describes the most recent submittals to the respective planning departments of potential upcoming projects within close proximity of the transmission line. The planned uses include natural resource developments (coalbed methane wells, wind turbines, underground coal mines), and urban uses such as fire stations, elderly housing and other industrial, commercial and residential uses. Many of these land uses are currently under development near the existing line.

3.10.2 Environmental Consequences and Mitigation Practices

3.10.2.1 Significance Criteria

Impacts to land use would be significant if the proposed project or alternatives:

- resulted in the termination or unauthorized change in land uses;
- were inconsistent with adopted land use plans or regulations of local, state, or federal agencies;
- resulted in long-term measurable impacts to the region's prime farmlands productivity; or caused long-term loss of economic viability of a farm or other business due to construction;
- directly impacted a designated wilderness area or wilderness study area;
- diminished recreation amenities, the quality of recreational experiences, or access to recreational facilities on a long-term basis.

3.10.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Existing Land Uses – Construction of the CH-MM transmission line rebuild would occur in Western's existing ROW. The width of the ROW would increase, on average, from 75 feet to 105 feet. However, near Laramie between MP 91 and MP 100, the ROW would increase from 50 feet to 105 feet for the new 230-kV wood structures. Existing land uses would not change; however, some land use restrictions may result due to the widening of the ROW for electrical clearances and safety standards.

Predominant land uses near the proposed transmission line rebuild include agricultural uses such as grazing and some cultivated lands. Other uses along the line include recreational, commercial, industrial, and residential. Over 77% of the land crossed is privately owned. The rebuild of the transmission line would not affect the economic viability of any of the agricultural uses within the project area in the long run or change the land uses along the ROW. Short-term impacts would include soil erosion, either by wind or water, and any contamination by release of regulated materials. Short-term impacts to some cropland may occur during construction activities. Western's Standard Construction and Mitigation Practices would be incorporated to reduce the potential impacts of soil compaction, erosion, and crop displacement during construction activities (Table 2.1-3, Mitigation Practices 1, 2, and 20). Impacts resulting from soil disturbances along the ROW would not be significant. The proposed project would not disrupt access to other public lands in the area or change the current condition of the existing transmission line. The transmission line rebuild would remain within the existing ROW, which currently traverses a 0.25-mile section of the northeastern boundary of Seminoe State Park and is adjacent to, but not within, the northwestern corner of the Bennett Mountains WSA. Visual impacts of the transmission line rebuild would be similar to the current visual condition, therefore would not have an increase in the visual effect on the overall aesthetic recreational experience (see Section 3.14). No significant recreational conflicts would result from the construction or operation of the proposed project.

Since the proposed project constitutes upgrading an existing transmission line, the project area is already being used for operation and maintenance of a transmission line. Neither construction nor operation of the transmission line would change the existing land uses within the project area.

However, short-term disruptions, particularly to existing residences and businesses due to increased noise, dust, and visual effects of project construction and equipment operations, may occur particularly along portions of CH-MM Section 4 (through Laramie – MP 97 through MP100) and CH-MM Section 5 (through Cheyenne- MP 143 through MP146) as described in Section 2.1.2 CH-MM Transmission Line Rebuild. The existing transmission line corridor would provide access for removal and rebuilding of the line. No new roads would be required.

From the Happy Jack Substation through the City of Cheyenne, from MP 140 through MP 146 the CH-MM and HJ-MM 115-kV wood structures would be replaced with new double-circuit 230/115-kV single pole steel structures. The existing ROW along this section is currently adequate for these structures. The new double circuit single pole steel structures would minimize the impact on existing land uses by reducing the existing ROW from 125 feet (with the two wood poles) to 105 feet. The reduction in ROW width would be considered a beneficial impact.

All current uses within the Western ROW are allowable uses according to Attachment 80-LM-04A, Allowable Uses Under Western ROW. Several housing units and some storage units are near or within the proposed ROW, but do not cause a public safety issue, impede maintenance of the transmission line, or affect the operation or maintenance of the transmission lines or structures. These uses would not be affected by the proposed project.

No long-term operation and maintenance impacts are anticipated. Because the line would likely operate more efficiently, routine maintenance may occur less frequently, therefore minimizing impacts to existing land uses.

Farmlands – There is no designated prime farmland in Carbon, Albany, or Laramie counties due to a short growing season or lack of surface irrigation waters (Jelden, NRCS, 2004). Short-term impacts to cultivated farmland from upgrading the transmission line would include some soil compaction. Short-term impacts would include soil erosion, either by wind or water, and any contamination by release of regulated materials. Short-term impacts to some cropland may occur during construction activities. Western’s Standard Construction and Mitigation Practices would be incorporated to reduce the potential impacts of soil compaction, erosion, and crop displacement during construction activities (Mitigation Practices 1, 2, and 20, Table 2.1-3). Impacts resulting from soil disturbances along the ROW would not be significant.

Land Use Plans and Regulations – The transmission line rebuild would conform to land use regulations for Carbon, Albany, and Laramie Counties in Wyoming. Citations for land use conformance include:

Carbon County Zoning Resolution, 2003, Chapter 4, Section 4.2, which allows public utilities (both overhead and underground) to be built on land zoned ranching, agricultural and mining; Albany County Zoning Resolutions, September 2002, Section 5. Telecommunications and Utility Overlay Zone and City of Laramie Municipal Code, updated from 1964, Sections 17.14.010 permitted uses in LR, RI, R2, and R2M districts; Cheyenne City Code 2002 Section 17.116.110 and 17.116.120 (Utility Regulations - Essential service utilities are a use by right); and, Cheyenne and Laramie County Zoning Ordinance, 1988, Section 55.050 and Section 55.060, which states essentially what the Cheyenne City Code states.

These land use regulations state that essential service utilities are a use by right. Disruption to existing land users is minimized by the location of the transmission line design by Western.

The proposed project conforms with the BLM's Great Divide Resource Management Plan 1990, which provides that all public lands be open to utility/transportation systems, and that utility systems be located next to existing facilities whenever possible.

Planned Land Uses and Developments – Planned land uses identified in 3.15.1 would not be directly impacted with the construction or operation of the proposed CH-MM transmission line rebuild, since the line would be built along the same transmission line ROW. Many of the proposed or developing projects are located near the existing line, therefore, the impacts would be no different from the current situation. Along CH-MM Section 5, where the proposed project would consist of replacing both the CH-MM and HJ-MM wood pole H-frame structures with one set of double circuit single pole steel structures, impacts would be minimized to existing and developing subdivisions because the ROW would not be widened through this urban area. In addition, the proposed project would result in an overall slight reduction in the number of structures (700-800 foot span for wood H-frame to 1,000-foot span for single pole steel structure). Consequently, the proposed project would be compatible with future land uses and no significant adverse land use impacts from construction or operations are expected from the proposed project.

Transmission System - AU-CH Transmission Line Rebuild

Existing Land Uses – Impacts to land use for the AU-CH Transmission Line Rebuild would be similar to those described for the CH-MM Transmission Line Rebuild. Since the proposed project constitutes upgrading an existing transmission line, the project area is already being used for operation and maintenance of a transmission facility. Neither construction nor operation of the transmission line would change the existing land uses within the project area. However, short-term disruptions to existing residences and businesses due to increased noise, dust, and visual effects of project construction and equipment operations may occur particularly along portions of the AU-CH Section 1 (south of Cheyenne – MP 1 through MP 4) as described in Section 2.1.2 AU-CH Transmission Line Rebuild. Along AU-CH Section 2, although the ROW would be expanded from an average of 75 feet to 105 feet, the span between structures would also be increased from 700-800 feet to 1000 feet. This would be a minor net beneficial impact for areas under cultivation. There would be no change in existing land use, thus no significant impact.

Farmlands – According to the NRCS in Weld County, CO (Wicky 2004) prime farmland soil types exist along the southern portion of the existing transmission line ROW. Cultivation of agricultural and prime farmland exists within the ROW, and no pivot irrigation system occurs in the project area. Short-term impacts to cultivated farmland from upgrading the transmission line would include the potential for disrupting agricultural operations and soil compaction. Long-term impacts would include the permanent loss of agricultural land for structures, and on-going limitations to agricultural operations, including increased weed control at structure sites. Short-term impacts to cropland may occur during construction activities due to the removal of existing H-frame structures, and the installation of new steel pole structures and new H-frame structures. Western would coordinate with landowners to minimize disruption to agricultural operations to the extent feasible. Western routinely settles damage claims with land owners for loss of crops or reduced productivity resulting from soil compaction (Mitigation Practice 20, Table 2.1-3).

Western's Standard Construction and Mitigation Practices would be incorporated to reduce the potential impacts of soil compaction, erosion, and crop displacement during construction activities (Mitigation Practices 1, 2, and 20, Table 2.1-3).

Long-term impacts to agriculture would range from beneficial to slightly adverse compared to the existing conditions. Beneficial impacts to agriculture would occur in AU-CH Segments 1 and 2.

Along these segments, the proposed project consists of replacing existing H-frame structures with new single pole steel structures. These changes would result in slightly beneficial effects to agricultural land and operations. Beneficial effects would result since the single pole steel structures have a longer span length and smaller “footprint” than the H-frame structures that would be removed. Consequently, less land would be permanently removed from production. Farming equipment and operations would also benefit, since there would be fewer structures in fields and equipment would be able to turn around easier. There would also be greater height clearance under the conductors for farm equipment. Weeds would also be easier to control around single pole steel structures, compared to the existing H-frame structures, that can create uncultivated islands between the poles. Some adverse impacts would also occur in Section 2, however. Along this segment, fields may be more difficult to spray for pesticides since the increased height and position of the new structures may pose obstacles.

In Section 3, between MP 32.1 and 35, slightly adverse impacts to agriculture and agricultural operations would result from increased land removed from production for new H-frame structures. Located adjacent to the existing lattice structure, the new H-frame structures would result in less land available for cultivation and increased time needed in performing agricultural operations. Similar to Segment 2, the proposed project may also cause impacts to the effectiveness of agricultural spraying of pesticides, due to the differences in height and position of the lattice and H-frame structures.

No long-term operation and maintenance impacts are anticipated. Because the line would likely operate more efficiently, routine maintenance may occur less frequently, therefore minimizing any impacts to existing land uses.

Land Use Plans and Regulations – The transmission line rebuild conforms to land use regulations for Laramie County and City of Cheyenne, Wyoming, and Weld County in Colorado. The land use codes for Laramie County and the City of Cheyenne are cited in the section above and the Weld County Code citation is Article III - Zone District Division 1A zone Section 23-3-20, Uses Allowed by Right. A Special Use Permit may be required as a 1041 - Special Use Permit Section 21-3-20 or Section 23-1-90.

Planned Land Uses and Developments – Planned land uses should not be impacted by the transmission line rebuild. In some cases, particularly along AU-CH Section 1, where the replacement of the wood H-frame structures with the single pole steel structures would occur in existing and developing subdivisions, the impacts may be minimized because of a reduction in structures (700-800 foot span for wood H-frame to 1,000-foot span for single pole steel) and a potential improvement in the visual impacts of the transmission structures due to an increase in height and decrease in breadth of the structure. No significant adverse land use impacts from construction or operations are expected from the proposed project because the transmission line rebuild is compatible with land use plans and regulations and does not interfere with future development within the project area.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

The proposed Snowy Range Substation would be located east of 9th Street in Laramie along a ridge north of the City of Laramie. Current land uses in the vicinity are grazing, open land area, a corral, and residential uses south within the city limits of Laramie. Recreational activity is limited to dispersed recreation such as walking and mountain bike riding in close proximity of the City of Laramie at the Snowy Range Substation. The existing transmission line runs immediately

adjacent to the proposed site. Other land uses in the area would not be impacted by the proposed facility. The proposed facility would conform to all City of Laramie Planning and Zoning regulations as cited above. There are no planned uses within the vicinity of the proposed substation. No significant adverse land use impacts from construction or operations are expected from the proposed Snowy Range Substation.

The minor modifications proposed for the Miracle Mile, Cheyenne, and Ault Substations would not impact existing or proposed land uses in the project area. All substation changes would be within the existing fenced substation facility.

3.10.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts from the CH-MM Alternative Route 1 would be similar to the proposed project. No additional land uses would be impacted. CH-MM Alternative Route 1, Part A, would be constructed on the existing HJ-MM ROW and Part B would be constructed on the existing CH-MM ROW. On Part B, between MP 97 and MP 99 the use of single circuit single pole steel structures would reduce the impact to a hay meadow and wetlands located in this area. The increased span of the single pole steel structures would reduce the number of structures located within this agricultural, industrial, and residential (east of U.S. 287) area, which could beneficially impact land uses. Reduced maintenance activity would also alleviate impacts to all land uses in the area of CH-MM Alternative Route 1, Part A and Part B. The ROW would increase from 50 feet to 70 feet for the 115-kV wood H-frame and 115-kV single pole steel structures and 50 feet to 105 feet for the 230-kV structures. Short-term land disturbance would be slightly more than for the proposed project (438 acres versus 414 acres) However, long-term disturbance would be minimal and the same as for the proposed project (0.9 acre).

Land owners and businesses located along Part B of the new 115-kV HJ-MM transmission line would experience short-term land use disruptions during the construction of the new portion of the line. However, there would be no long-term changes to current land uses or impacts to agricultural use. Operation and maintenance of the line would be similar to the current situation, but would require less on-site maintenance due to the improved efficiency of the line and the new structures. CH-MM Alternative Route 1 would conform to all Albany County and City of Laramie planning and zoning regulations. No planned land uses would be impacted by this alternative.

CH-MM Alternative Route 1 allows Western to use the existing ROW of the HJ-MM 115-kV line section under Part A for the CH-MM transmission line rebuild, rather than incur the cost of new ROW in parallel with the existing line. Rebuilding Part B, from Snowy Range Substation to the west line split, allows Western to remove the existing CH-MM line and to rebuild the new portion of the 115-kV HJ-MM transmission line, again using the existing CH-MM transmission line ROW. No significant impact would result from CH-MM Alternative Route 1.

AU-CH Alternative Route 2

The AU-CH Alternative Route 2 provides an opportunity to straighten transmission line in two locations. The two reroutes would improve the existing alignment of the AU-CH transmission line, which would reduce the impact to the surrounding land uses.

These realignments would reduce the impacts to agricultural lands along the alignments and would provide efficiency in maintenance and access of the adjacent lines as compared to the proposed project. No additional land uses would be impacted. The improved alignments would reduce the impacts on existing land uses and would conform to Weld County planning and zoning regulations. No planned land uses would be impacted by this alternative. The consolidated ROW would have beneficial effects for the land owner in terms of more efficient use of their agricultural land.

Construction activities from the AU-CH Alternative Route 2 would have less impact on existing agricultural operations than the proposed project due to location of the re-route off agricultural land onto the county road ROW easement. Long-term beneficial effects would result to agricultural use with the re-route. Operation and maintenance of the line would be similar to the current situation, but would require less on-site maintenance due to the improved efficiency of the line.

No Action Alternative

Under the No Action alternative, no changes to the existing CH-MM and AU-CH transmission lines or substation facilities would occur. From a land use perspective, no additional land uses would be impacted. However, maintenance of the existing lines and substation may increase. Increased maintenance may require increased access to the ROW and more maintenance activities along the ROW, which could affect residences and other commercial, industrial, or agricultural land uses. However, no significant adverse land use impacts are expected from the No Action Alternative.

3.11 Socioeconomics and Community Resources

3.11.1 Affected Environment

This section addresses historical and present socioeconomic conditions in the four counties that would be affected by the proposed transmission line rebuild. The project area includes the regional and local community settings. Topics reviewed include population, employment and income, and housing. Tables 3.11-1 through 3.11-4 summarize baseline conditions within the four-county area. The only urban communities affected by the transmission line rebuild are Laramie in Albany County and Cheyenne in Laramie County, both in Wyoming. This section of the EA also addresses issues related to Environmental Justice, as required under Executive Order 12898.

3.11.1.1 Demographics

Employment and Income

The project area has a diverse economic base, with the greatest percentages of total employment occurring in the services, government, and retail trade sectors, except for Weld County, which has a large manufacturing sector (U.S. Dept. of Commerce, BEA, 2003).

Employment and unemployment for 2003 in each of the counties within the project area is shown in Table 3.11-1. Carbon County had an estimated unemployment rate of 5.6 percent in 2003, Albany County 1.9 percent, Laramie County 4.1 percent, and Weld County 5.7 percent. Unemployment rates reflect an improving economy throughout the region, with increased activity in the Mining Sector in Carbon County and in the Services Sector in the other three counties. The total labor force for the four-county area is estimated at over 173,837.

Table 3.11-1. Labor Force Summary 2003

County	Labor force	Employed	Unemployed	%
Carbon County	8,121	7,670	451	5.6
Albany County	19,704	19,322	382	1.9
Laramie City	16,960	16,641	319	1.9
Laramie County	44,132	42,314	1,818	4.1
Cheyenne	30,991	29,731	1,260	4.1
Weld County	101,880	62,987	3,806	5.7

Source: Wyoming Dept of Employment, Research and Planning, Bureau of Labor Statistics, Colorado Labor Market Information

The employment by industrial sector is shown in the Table 3.11-2. The construction sector represents 8.4 percent of total employment (137,335), with over 11,546 employed in the construction sector within the four counties.

Average weekly wage in the construction trade in Wyoming was \$658 in 2003 compared to \$681 in Colorado (Wyoming Department of Employment Occupational Employment and Wages; and Colorado Dept of Labor and Employment: Employment and Wages). Average annual earnings per job in the affected counties was \$26,681 in Carbon County, \$26,773 in Albany County, \$33,987 in Laramie County, Wyoming, and \$31,104 in Weld County, Colorado in 2002.

Table 3.11-2. Full and Part-Time Employment by Type and Industry (NAICS) – 2002

	Carbon County	%	Albany County	%	Laramie County	%	Weld County	%
Ag, For, Fish	143	1.6	95	<1	D		3,322	4.6
Mining	235	2.6	29	<1	193	<1	1,362	1.9
Construction	637	7.0	1,088	5.3	3,426	6.2	6,395	8.8
Manuf.	551	6.0	710	3.4	1,694	3.1	10,435	14.4
T.U.P.U.	591	6.5	D		2,479	4.5	1,922	2.7
Wholesale Trade	173	1.9	235	1.1	898	1.6	3,242	4.5
Retail Trade	1119	12.2	2,254	10.9	7,185	13.1	7,830	10.8
F.I.R.E.	624	6.8	597	2.9	4,621	8.4	3,837	5.3
Services	2537	27.8	5,094	24.7	14,728	26.8	21,338	29.4
Government	2238	24.5	7,254	35.2	15,867	28.9	11,730	16.2
Total Industry	9,140		20,628		54,917		72,650	

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis, 2003

Demographic Trends

Population – Population for the project area is shown on Table 3.11-3. Population in Carbon County has decreased by 8.2 percent between 1990 and 2003, increased by 3.5 percent in Albany County, and 15.0 percent in Laramie County. Wyoming as a whole has generally shown either slow growth or no growth in recent history. Weld County is one of the fastest growing counties in the US and showed a 53.5 percent increase from 1990 to 2003.

Table 3.11-3. Population Growth in the Project Area

	1990	2000	2003	% Increase 1990-2003
State of Wyoming	453,588	493,782	501,242	10.5
Carbon County	16,659	15,639	15,302	(8.2)
Albany County	30,797	32,014	31,887	3.5
Laramie	26,687	27,204	26,956	1.0
Laramie County	73,142	81,607	84,083	15.0
Cheyenne	50,008	53,011	54,374	8.7
Weld County	131,821	180,936	202,329	53.5

Source: U.S. Bureau of the Census, Wyoming Economic Analysis Division, Colorado Division of Local Government

The race composition of the project area is composed primarily of White or Hispanic ethnic background. The Carbon County population is 82.4 percent White and 13.8 percent Hispanic, Albany County is 87.5 percent White and 7.5 percent Hispanic, Laramie County is 83.3 percent White and 10.9 percent Hispanic, and Weld County is 70 percent White and 27 percent Hispanic (US Bureau of Census, 2000).

Housing

The CH-MM Transmission Line is located within close proximity to the cities of Cheyenne and Laramie, which have a large number of short-term housing accommodations. Laramie has over 20 motels with an estimated 1,015 rooms and 105 spaces at the KOA campground; Cheyenne has 22 motels with more than 2,200 rooms and 750 campsites. These towns are within commuting distance of the transmission line project. In addition, Medicine Bow has two motels with 33 units; Rock River has one motel with eight units and a campground, Arlington has 35 campsites.

Campsites (94) are available at Seminoe State Park. No RV hook-ups are available in the State Park. Travel trailers are allowed in public campsites. Dispersed camping is allowed on all BLM and Bureau of Reclamation (BOR) lands except within the Moran Creek Big Game Winter Range. In addition, there are several public and private campgrounds throughout the area that provide campgrounds facilities for transient workers. Other temporary accommodations are available along the transmission line route

From Cheyenne to Ault there is adequate temporary housing in Cheyenne, Greeley, Wellington, Windsor, and Fort Collins. Fort Collins has over 22 motels with over 2,200 rooms. Greeley has over 17 motels with over 800 rooms. In addition, Wellington and Windsor have temporary accommodations.

In addition to temporary housing there is adequate permanent housing within commuting distance of the route throughout the project area.

3.11.1.2 Public Services

Public Services throughout the project area are provided by various private and public entities, including counties, municipalities, special districts and private interests. Because of the minimal level of population impacts anticipated during the construction phase of the project, only public facilities that might potentially be impacted by accidents of transmission line construction will be covered in this section.

Emergency Services - Law Enforcement and Hospital

Emergency services provided in Carbon County, Albany County, Laramie County, Wyoming, and Weld County, Colorado include fire, sheriff and police, ambulance, and hospital services.

Law enforcement services are provided by the Carbon, Albany, Laramie and Weld County Sheriff's Departments and the Cities/Towns of Cheyenne, Laramie, Greeley, Ault, Pierce, and Eaton police departments. Officers are stationed in Rawlins, Medicine Bow, Laramie, Cheyenne in Wyoming and the Weld County sheriff is located in Greeley. Fire protection is provided by the Carbon County Fire Department, Medicine Bow Volunteer Fire Department, Union Colony Fire Rescue Department, and the Cities of Cheyenne, Laramie, and Ault-Pierce fire departments.

There are six hospitals in the project area within close proximity of the transmission line: two in Cheyenne (Spalding Rehab and United Medical Center); one in Laramie (Ivinson Memorial Hospital); one in Rawlins (Memorial Hospital of Carbon County); one in Weld County (North Colorado Medical Center), and one in Fort Collins (Poudre Valley Hospital).

3.11.1.3 Environmental Justice

Under Executive Order 12898 (published in the Federal Register February 11, 1994), federal agencies are required to identify and address disproportionately high or adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice. As required by law and Title VI, all federal actions will consider potentially disproportionate negative impacts on minority or low-income communities. Within the area potentially affected by the proposed project, minimal minority populations are affected. During the EA process, particular efforts were made to ensure that property owners within the affected areas were informed of the proposed project, the EA procedures, and the opportunity to provide comments.

Income levels throughout the project area are diverse. The most recent estimate of per capita personal income was in 2002, and shows a range of \$24,495 in Weld County, Colorado to \$30,949 in Laramie County. These numbers reflect the disparity of incomes in the more agricultural-oriented Weld County compared to more urban Laramie County. The most recent poverty status statistics are from the 2000 census data and may not reflect the current conditions, however, these data showed poverty status for 11.9 percent (1,744) of the population in Carbon County, 13.2 percent (3,960) in Albany County, 10.3 percent (8,158) in Laramie County, and 12.5 percent in Weld County (US Bureau of the Census 2000). Since the economic base of the western portion of the project area is largely rural agriculture and the eastern portion more diverse, low-income areas are dispersed within the project area. People within the poverty status may reside along the route, but not disproportionately.

Table 3.11-4 highlights demographic statistics for identifying potential areas of concern. The 2000 Census data was used for the analysis of race and income data was used for analysis of poverty.

Table 3.11-4. 2000 Census Community Statistics for Environmental Justice Analysis

Percent of Population	Wyoming	Colorado	Carbon	Albany	Laramie	Weld
Persons Below Poverty Level	54,214	400,017	1,744	3,960	8,158	22,617
Percent Below Poverty	11.2	9.3	11.9	13.2	10.3	12.5
White	92.1	74.5	90.1	91.3	88.9	70.0
Black	0.8	3.8	0.7	1.1	2.6	0.6
American Indian	2.3	1.0	1.3	1.0	0.8	0.9
Asian	0.6	2.2	0.7	1.7	1.0	0.8
Native Hawaiian or Pacific Islander	0.1	0.1	0.1	0.1	0.1	0.1
Other Race	4.3	7.2	7.3	4.8	6.6	13.3
Hispanic Origin (of any race)	6.4	17.1	13.8	7.5	10.9	27.0

3.11.2 Environmental Consequences and Mitigation Practices

3.11.2.1 Significance Criteria

Impacts to socioeconomics would be significant if:

- temporary tourist housing is impacted by construction workers;
- minority or low-income populations are disproportionately affected by the transmission line rebuild.

3.11.2.2 Impacts of the Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Construction – The construction phase of the project is anticipated to begin in 2007 and end in 2009 on the various segments of the line. The workforce would average 5-6 people per crew with 2 to 5 crews working 10-hour days (Trujillo 2004). It is anticipated that the workforce would be mostly local if a local contractor is hired and 60% to 70% non-local if an out-of-state contractor is hired. Construction workers would likely stay in RV campers or short-term rental units in

different locations along the route. If local, some workers would commute to and from their permanent residence on a daily basis if within one hour of the show-up area.

One to three staging areas of 5 acres each would be designated for each section of line built. The approved contractor would negotiate the location of the staging areas. The staging areas are typically on private land and would not affect transportation or use of public lands.

Wage rates for the skilled and unskilled construction workers range from \$8.52 per hour for laborers to \$27 per hour for line construction workers including benefits. A portion of this income would be spent in the local area of the transmission line construction for goods and services. This would have a positive impact on local businesses such as restaurants, service stations, and miscellaneous retail stores. In addition to local expenditures near the transmission line route, workers would also be contributing to their local economy in the form of local expenditures for goods, services, housing, insurance, entertainment, and food.

Total project cost is estimated at \$62.5 million (WAPA 2004). A portion of this would be spent in the local area diesel fuel, fuel oil and miscellaneous supplies and repairs (Trujillo 2004). This would be considered a positive impact to the local economy. Private land owners would be reimbursed for the increase in ROW and also for any crop losses from construction activities.

Based on information provided in Section 3.11.1 Housing, temporary accommodations provided in the project area are more than adequate for the estimated 20 to 25 short-term employees.

Emergency Services including fire, police, ambulance, and hospital services would not be impacted by increases in population or employment during the construction phase of the proposed project. The only impacts that would affect the provision of emergency services within the project area would be a construction accident or possibly traffic impedance for short periods of time. Basic medical and emergency services, which may be required in the event of an accident, are available throughout the project area as described in Section 3.11.1.2.

Due to the minimal number of construction workforce (20 to 25 maximum for all crews), it is not anticipated that temporary tourist housing would be affected. Thus, there would not be significant impacts on the local area population, employment, housing, or infrastructure.

The operations phase of the project would have little or no impact on population, employment, housing, or local infrastructure. The same numbers of operations workers would maintain the rebuilt line. Maintenance activity could actually be less, considering the improved reliability of the rebuilt line.

Transmission System - AU-CH Transmission Line Rebuild

Impacts would be similar to those described for the CH-MM transmission line rebuild.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne, and Ault Substation Modifications

Impacts would be similar to those described for the CH-MM transmission line rebuild.

The construction workforce associated with construction of the Snowy Range substation in Laramie would range from 6 to 40 peak employees (Trujillo 2004). If the contractor is local most workers would commute to and from their permanent residences. If the contractor were non-local,

a portion (70%) of the workforce would relocate to the area for the duration of the construction activity. These workers would need to find temporary housing in Laramie or Cheyenne. Income generated in the form of direct wages to employees, and direct expenditures by the contractor would be filtered into the local economy. Adequate facility and services exist in Laramie or Cheyenne to provide adequate services to the temporary population as described in sections 3.11.1.1 and 3.11.1.2. No significant socioeconomic impacts would occur.

3.11.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

Impacts would be similar to those described for the CH-MM Transmission Line Rebuild.

AU-CH Alternative Route 2

Impacts would be similar to those described for the CH-MM transmission line rebuild.

No Action Alternative

The No Action Alternative would preclude average employment for an estimated construction workforce of 20 for the proposed transmission line and a maximum of 32 for the Snowy Range Substation and Substation modifications. Income generated in the form of direct wages to employees and direct expenditures by the transmission line contractor and Western would not be filtered into the local economies adjacent to the route. However, maintenance workers would actively be maintaining the line and maintenance expenditures in the area would occur as is the current situation.

3.11.2.4 Environmental Justice

Neither low income (poverty status) nor minority populations would be disproportionately impacted by the proposed project or any of the alternatives. As described in the Environmental Justice section (3.11.1.3) of the Environmental Setting, the economic base of the area is predominately agriculture and natural resource development except in the cities of Laramie and Cheyenne. Segments of the population are lower income, particularly in rural farm communities, due to a typically lower income generated in the agricultural sector. However, families within the defined poverty status represent less than 14 percent (in 2000) and are dispersed throughout the project area. No new properties would be impacted by the transmission line rebuild.

The proposed project would not have a disproportionately high or adverse effect on minority and/or low-income populations or corresponding property values of minority or low-income populations. No significant impact to low-income or minority populations would occur.

3.12 Transportation and Communications

3.12.1 Affected Environment

The project area for transportation and communications includes the regional and local area that may be used to access the project ROW and substation sites. The transportation system in the project area is predominantly automobile oriented, relying almost exclusively on public roads and highways. Surface transportation in the area is provided by a network of primary, secondary, and local roads. The project area is served by two interstate highways (I-80 and I-25), two US Highways (US 287/30 in Wyoming and US 85 in Colorado), four Wyoming State routes (SR 223, 210, 13, and 487), one Colorado State Route (SR14) and several local BLM and Carbon County roads (CR- 121, 270, 351, BLM 3159, 3109) in Carbon County. Between Medicine Bow and Seminoe State Park, only local Carbon County or BLM light duty roads provide access to the ROW. In Albany and Laramie counties various ranch roads provide some access to the transmission line. In Albany County the transmission line crosses over State Route 13 near Arlington and County Rd. 17 in Laramie. Otherwise undesignated roads and Western's access routes are the access to the line except in the urban areas. From Cheyenne to Ault access is limited until Weld County Rd. 27 parallels the line nearly to the Ault Substation.

The primary Interstates, U.S. Highways, and State Routes are hard surface and well maintained. Carbon County Road 351 is currently being upgraded to the Seminoe dam where the BOR takes over maintenance of the road. Up to this point the state route is paved and in excellent condition. Other County and BLM roads providing access to the transmission line (CR- 121, 270 and BLM 3159, 3109) are not regularly maintained and are generally considered in poor to fair condition depending on the season and how often road maintenance crews are in the area. These access roads are not heavily used and are not maintained often. Ranchers, agency personnel and some hunters, fishermen, and other dispersed recreationists utilize these roads (Clair 2004).

3.12.2 Environmental Consequences and Mitigation Practices

3.12.2.1 Significance Criteria

Impacts to transportation would be significant if:

- use of public highways and roads was restricted, resulting in adverse impacts to emergency response capability or economic hardships to local businesses.

3.12.2.2 Impacts of Proposed Project

Transmission System - CH-MM Transmission Line Rebuild

Impacts to transportation would be associated with construction-related traffic on the major and local transportation systems within the project area. Large truck traffic and traffic associated with employees traveling to and from the job site on a daily basis would potentially impact the transportation systems within the area.

For the proposed project, one to three staging areas per segment of transmission line would be located along the route (Trujillo 2004). Construction materials would be stored at the temporary staging areas. Materials would be hauled to the staging areas using existing roads and streets.

Generally the contractor negotiates staging areas with a private landowner. At this time the staging areas are not known, however, it would be assumed that they would be located on private land easily accessible from a major transportation route and would not impact public property or public access routes.

Two to five construction crews (including demolition, hauling/framing, setting, and stringing), with up to 5 persons per crew, would travel to and from the respective show-up area (where the job trailer is located) each morning and evening. The show-up area is not the same as the staging area. Based on the number of workers per crew, the peak construction workforce would be a maximum of 25 vehicles. Some workers would carpool to and from the show-up area from where they are residing, reducing the number of vehicles on the roadways. Crews would work a 10-hour day (from sun-up to sun-down). On average the construction crews could complete 10 to 12 structures per day, however, the 2 to 5 crews are working on different components of the line (demolition, hauling, setting, or stringing), therefore progress along the route would range widely, from 4 to 8 miles per month (Trujillo 2004). Other construction traffic would also be utilizing the transportation system at this time of day, but traffic along the route is moderate to low.

The routes that would be affected from transportation of materials and workers for the CH-MM Transmission Line Rebuild would potentially include (I-80 and I-25), two US Highways (US 287/30 in Wyoming, four Wyoming State routes (SR 223, 210, 13, and 487), and several local BLM and Carbon County roads (CR- 121, 270, 351, BLM 3159, 3109) in Carbon County. Between Medicine Bow and Seminoe State Park, only local Carbon County or BLM light duty roads provide access to the ROW. Otherwise undesignated roads and Western's access routes provide direct access along the ROW, except in the urban areas where local streets in Laramie and Cheyenne would be impacted by truck traffic and worker vehicle traffic. No new access routes would be constructed.

Traffic impacts related to truck transportation of materials and supplies would be sporadic throughout the demolition and construction periods. Structures would be removed and stockpiled along the route, then removed altogether from the area during demolition. New structures would be stockpiled at staging areas and brought to the construction site either assembled or partially assembled. Typically equipment used in dismantling and construction of the transmission line include the following: pick-up trucks, blade, tractor trailer, hydrocrane, flat bed truck, tractor with auger, bobcat backhoe, crane (50- to 100-ton capacity), reel trailer, tensioner, puller, digger, winch truck, bucket truck, and hydroseeder. Generally, a maximum of 4 trucks would be at a particular site location at any one time, considering the sequential manner in which demolition and construction occurs.

Only minor traffic delays or interference with the project area highway system would result from project construction. Transmission line removal and construction techniques should not require even temporary closure of main highways. Users of smaller gravel access routes or local collector streets may experience some minor delays. Western would work closely with state and county road departments, so that crossings are posted and detours provided where necessary (Mitigation Practice 17, Table 2.1-3).

The highways providing access to the transmission line ROW have adequate capacity to handle both construction worker traffic and truck traffic associated with demolition and construction of the rebuilt line. It is not anticipated that any significant impacts would occur to the transportation or communication systems within the project area due to the short duration of the construction activity. However, potential impacts may occur on dirt roads from transport during wet weather conditions. Mitigation Practices 1 and 2 from Table 2.1-3 would be implemented to minimize

these impacts. No emergency access would be impeded or permanent changes to the transportation or utility systems would occur. Western's Standard Construction and Mitigation Practice 17 (Table 2.1-3) would be implemented to reduce the impacts to transportation.

Construction activity within residential neighborhoods may cause short-term traffic delays during material hauling and other construction operations. These impacts would not be considered significant due to the short duration.

Operation and maintenance of the line would likely require fewer trips with the rebuild due to the improved efficiency of the line. Transportation impacts would be reduced with the proposed project.

Transmission System - AU-CH Transmission Line Rebuild

Impacts for the AU-CH segment of the transmission line rebuild would be similar to those discussed for the CH-MM transmission line rebuild.

The routes that would be affected from transportation of materials and workers would potentially include (I-80 and I-25), US 85 (in Colorado), one Colorado State Route (SR14) and Weld County Rd. 27, which parallels the line nearly to the Ault Substation. Local streets in Cheyenne would also be impacted during demolition and construction activities, but the impacts would not be considered significant due to implementation of Mitigation Practice 17 (Table 2.1-3) and efforts to minimize traffic delays and road damage.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne, and Ault Substation Modifications.

Construction of the proposed Snowy Range substation would require approximately one year with a peak labor force of 40. Construction workers would likely live in Laramie or Cheyenne for the short-term construction period and would commute to and from the job site. The transportation system in Laramie is adequate to handle both material hauling and commuter traffic to the proposed site. Traffic delays from construction activity, impacts to emergency access, and/or impacts to roadways or communications systems are not anticipated from construction or operation activities on the proposed Snowy Range Substation or modifications to the Miracle Mile, Cheyenne, or Ault substations.

3.12.2.3 Impacts of Alternatives

CH-MM Alternative Route 1

Impacts would be similar to those described for the CH-MM Transmission Line Rebuild. Construction activity would occur along CH-MM Alternative Route 1 Part A in 2007 and Part B in 2008. Some minor traffic delays may occur along U.S. Highway 287 and on local collector and arterial routes within the City of Laramie during the construction period.

CH-AU Alternative Route 2

The impacts of Alternative Route 2 would be similar to those described for the AU-CH transmission line rebuild.

No Action Alternative

The existing transportation system would remain the same in the region with the No Action Alternative. Traffic volume would increase concurrent with the growth patterns of the area. Current access on improved dirt, four wheel drive, and high clearance roads to the transmission line ROW and substations would not change. However, more frequent failure of the lines would cause increased traffic along state routes and access routes for maintenance purposes.

3.13 Visual Resources

3.13.1 Affected Environment

3.13.1.1 Introduction and Definition of Terms

Visual resources consist of landforms, vegetation, rock and water features and cultural modifications that create the visual character and sensitivity of landscapes. Important visual resources are areas that have landscape qualities of unusual or intrinsic scenic value and areas of human and cultural use that are valued for their visual settings. Factors considered in evaluating the importance of visual resources include the following:

Visual Quality is defined as the overall visual impression or attractiveness of an area, considering the variety, vividness, coherence, harmony or pattern of landscape features. Visual quality is defined according to three levels in the EA – *Distinctive*, resources that are unique or exemplary in quality; *Representative*, resources that are typical of the physiographic region and commonly encountered; and *Indistinctive*, those landscape or cultural areas that either lack visual resource amenities or have been degraded.

Visual Sensitivity is defined as a measure of an area's potential sensitivity to visual change, considering types of viewers and viewer exposure. Visual sensitivity considers viewer types and volumes, as well as viewing distance zones. Areas and associated viewer types considered to be potentially sensitive to visual changes include: park, recreation and wilderness study areas, major travel routes, and residential areas. Three distance zones are discussed for potentially sensitive view areas – *foreground* (within .5 mile), *middleground* (within .5 to 2.0 miles) and *background* (beyond 2.0 miles).

Visual Resource Management Classes – VRM classes are assigned by the BLM through the Resource Management Plans (RMPs). Four classes have been identified by the BLM as described below.

- Class I – The objective of this class is to preserve the existing character of the landscape. The class provides for natural ecological changes. The level of change to the characteristic landscape should be very low and must not attract attention.
- Class II – The objective of class II is to retain the existing character of the landscape. The level of visual change should be low. Management activities may be seen, but should not attract the attention of the casual observer.
- Class III – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer.
- Class IV – The objective of this class is to provide for management activities that require major modification to the existing character of the landscape. The level of change to the characteristic landscape can be high. Overview of the Project Area – Visual Quality, Visual Sensitivity and BLM VRM Classes

Visual Quality

The project area for visual resources includes the proposed project ROW, access roads, substation sites, and surrounding areas where the proposed project may visibly change the character of existing views. Since this proposed project is a rebuild of existing transmission lines, the project area was limited to no more than 2 miles from the project ROW. Beyond this distance, the changes between the existing transmission utility ROW and the proposed transmission ROW would be imperceptible to viewers. Substation site modifications and the new Snowy Range Substation would similarly not be perceived by viewers beyond a two-mile viewing distance.

The project area crosses through south-central Wyoming and northern Colorado. The northern part of the project area near the Seminoe State Park and Bennett Mountain Wilderness Area is characterized by steep and mountainous topography, rock outcroppings, and the Seminoe Reservoir and North Platte River. Scenic quality is Distinctive within the region, and the area provides a variety of opportunities for scenic enjoyment as well as recreational opportunities.

The majority of the project area passes through landscapes that are representative of the south-central Wyoming and northern Colorado landscapes. South and southeast of the Seminoe Reservoir, the landscape is characterized by a series of rugged hills and draws that transition to predominantly rolling to flat grasslands and rangelands, closer to Laramie. A number of intermittent meandering streams, creeks and associated wetlands vegetation cross open rangelands and hay fields, providing localized visual diversity to the otherwise homogeneous landscapes. East of Laramie, the existing line crosses the Laramie Mountains, before transitioning to open rangeland near Cheyenne, Wyoming. Developed commercial, industrial, and residential areas are crossed by, or adjacent to, the CH-MM transmission line, in the vicinities of Laramie and Cheyenne. The visual qualities of these cultural landscapes are also considered to be representative of Wyoming's communities and subdivisions. Along the AU-CH transmission line, the natural scenic qualities remain similar to the CH-MM ROW, and consist predominantly of open rangeland and irrigated agricultural landscapes. Developed and developing residential subdivisions are increasing becoming more prominent components of the landscape, south of Cheyenne. Overall, the visual qualities of these landscapes are also typical or representative of the region.

Visual Sensitivity

The viewer groups and use areas described below are considered to be of high or moderate visual sensitivity due to the type of use and viewing distance from Western's existing and proposed transmission facilities. Areas of visual sensitivity are defined to include park, recreation, natural areas, major travel routes and residential areas within a foreground to middleground viewing distance zone (i.e. within 2 miles) of the proposed project: Potentially sensitive uses beyond two miles are not considered in this study since the proposed project changes to Western's existing ROW and transmission facilities would be visually indiscernible, compared to the existing conditions, beyond two miles.

Park, Recreation and Natural Areas (WSA's) – Developed park and recreation areas within 2 miles of the project area are located in the northern part of the CH-MM transmission line and ROW. These include the Seminoe State Park, Seminoe Reservoir, and Miracle Mile prime trout fishery. Designated natural areas are Bennett Mountain Wilderness Study Area and the Morgan Creek Big Game Winter Range.

Major Travel Routes – Major travel routes in the project include: Interstate 80, Interstate 25, U.S. Highways 287/30 and US 85, Wyoming State routes SR 223, 210, 13, and 487, and Colorado State Route SR 14.

Residential Areas and Communities – Residential areas, communities and subdivisions within the foreground to middleground viewing distance zones of the project include: Wyoming - Town of Medicine Bow, incorporated cities of Laramie and Cheyenne, Gilchrist residential area, Harmony Point, Harmony, Orchard Valley, Bison Crossing and Winchester Hills subdivisions and dispersed residences primarily found between the towns and Laramie and Cheyenne, and south of Cheyenne.

BLM VRM Classes

The BLM has identified VRM Management Classes I through IV for public lands crossed by, or near the CH-MM Rebuild Project. No public BLM lands are crossed by the project between the AU-CH substations. The following BLM VRM classes apply to lands in the CH-MM project area.

VRM Class I – applies to the Bennett Mountain Wilderness Study Area. The Wilderness Study Area is located adjacent to, and north of, the HJ-MM transmission line ROW , and east of the Seminole State Park. The CH-MM transmission line passes to the west and south of both the HJ-MM transmission line and the WSA.

VRM Class II – VRM Class II has been designated by BLM for public lands in the vicinity of the Seminole State Park and Reservoir. VRM Class II lands surround the state park and reservoir, and are crossed by the existing Western transmission lines for approximately 10 miles south of the Miracle Mile Substation.

VRM Class III – VRM Class III has been designated for the majority of public lands crossed by, or adjacent to the CH-MM transmission line. Public lands crossed by the project in this area are predominantly dispersed in checkerboard pattern and are representative of public land visual amenities.

VRM Class IV –VRM Class IV applies to BLM public lands that are available for mineral and energy developments. Class IV VRM lands primarily lie to the south of Western’s existing transmission lines.

3.13.2 Environmental Consequences of the Proposed Project and Alternatives

3.13.2.1 Significance Criteria

Visual impacts from the proposed project or alternatives would be significant if:

- the proposed project or alternatives caused long-term visual changes that diminished the value or use of established parks or recreation areas of national and regional importance, or designated scenic areas with recognized regionally important viewsheds.

The assessment of visual impacts is based on BLM criteria and standards for evaluating visual contrasts. The assessment of visual contrasts considers the degree of perceived change in line, form, color, and texture that the project would cause from representative key observation points

(KOPs). Three photographic visual simulations were prepared for the project and alternatives from representative KOPs to illustrate the visual characteristics of the existing 115-kV transmission facilities and the changes that would be caused by the rebuild of the transmission lines to 230kV. The visual simulations illustrate typical structure designs under consideration by Western for the project. These are shown in Figures 3.13-1, 3.13-2 and 3.13-3 at the end of this section. Appendix A contains background technical information that was used for preparing the simulations.

3.13.2.2 Impacts of the Proposed Project

Transmission System – CH-MM Transmission Line Rebuild

Visual impacts from the proposed project would primarily be long-term in nature, lasting the life of the project. Long-term visual changes would result from the visibility of the new overhead 230-kV structures, hardware and conductors. Short-term visual and aesthetic impacts would also result from the presence of construction crews and equipment, and the disruption of soils for access road improvements and for clearing and grading at structure sites where structures are either being installed (e.g. for the 230-kV line) or removed (i.e. for the 115-kV line). Short-term and long-term visual impacts are described below by landscape types and viewer groups.

Short-Term Impacts

Short-term visual and aesthetic impacts would result from the presence of construction crews and equipment, and the temporary disruption of soils. The construction of the project would occur in phases, with 2 to 5 construction crews and equipment moving along the ROW for site clearing and grading, structure excavation and replacement, conductor stringing and tensioning, and structure disposal and clean-up. The construction schedule and sequence of activities are described in Section 2.1.7. Visibility to fugitive dust, as well as construction vehicles and equipment would occur. Visual impacts from construction activities would be minor and less than significant to sensitive residential communities, roadways, and park and recreation areas, due to both the short-term and intermittent nature of these activities. Western would also implement Standard Construction and Mitigation Practice 5 (Table 2.1-3) to reduce construction-related impacts to landscape character.

Long-Term Impacts

The proposed project would result in long-term visual and aesthetic changes that would affect a variety of landscapes and viewer groups. The degree and nature of project-related visual and aesthetic impacts would depend on specific viewer groups affected, the viewing conditions and distances from which the project changes would be seen, the type of transmission changes proposed, and the resulting contrasts that the project would cause. Long-term visual impacts are described below by landscape and viewer types.

BLM VRM Class I and II Areas – The Bennett Mountain WSA is a VRM Class I area. This Class I landscape is located adjacent to Western’s existing HJ-MM ROW. VRM Class II landscapes are crossed for approximately 10 miles, where the proposed project would cross BLM lands that surround the Seminole State Park and Reservoir. For the first 6.6 miles, the proposed project would entail no structural changes to Western’s existing facilities, consequently no long-term visual changes, or contrasts would result to either the VRM Class I or II landscapes. From MP 6.6 and 10, the proposed project would entail replacing the existing CH-MM 115-kV H-frame structures with similar design H-frame structures, and the installation of a new 230-kV

conductor and hardware. The difference in visual character between the existing and future landscape would be due solely to the increased size for the 230-kV H-frame structures and larger 230-kV conductor. The new H-frame structures would be similar in design, but larger in scale. Typical heights for the 230-kV H-frame structures would be 70 feet compared to the 52 feet for the existing H-frame structures. Similar increases in width would also occur, with the 230-kV H-frame structures having a width of 24 feet, compared to 12 feet for the 115-kV H-frames. Overall, these scale changes would be slightly adverse, and not significant from a visual perspective. The new H-frame structures and associated hardware and conductor would not be located within the Class I VRM area, and therefore would not directly conflict with the VRM Class I area and visual management objectives. Impacts to VRM Class II landscapes would be slightly adverse, and less than significant, due to the relatively weak changes in form and line that would result. Other visual aspects of color and texture would remain the same as the existing transmission facilities.

Park and Recreation Areas – The proposed CH-MM Rebuild Project would have minor, and less than significant visual impacts on developed park and recreation areas due to the relatively weak visual contrasts that the proposed project would create. Very weak to no identifiable visual impacts would result to the Seminoe State Park Reservoir and Miracle Mile prime trout fishery. The proposed project would be located to the east of these recreation areas. No visual impacts would result for the first 6.6 miles, where the existing lattice structures and conductors would be used and uprated. Beyond the first 6.6 miles, the line would primarily be viewed at middleground distances from the reservoir and other developed park facilities, and visual changes resulting from the rebuilt H-frame structures and new conductor would be perceived as minor structure and line changes to an existing utility corridor. Visual contrasts of the proposed project would be weak, when viewed at from a middleground distance zone, and compared to the existing setting.

Residential Areas and Communities – Residential areas, communities and subdivisions are within the foreground to middleground viewing distance zones of the CH-MM Rebuilt Project. Residential viewers are most concentrated in and around Laramie and Cheyenne, Wyoming, including the Gilchrist residential area. Visual impacts to these viewing locations would be less than significant due to the weak to moderate changes in form and line contrasts that would result from the proposed rebuild project. Near Laramie Wyoming, the proposed project would consist of replacing the existing 115-kV H-frame structures with similar design, new 230-kV H-frame structures. The new structures would be 70 feet tall, on average, and 22 feet wide, compared to the 115-kV structures that are 52 feet tall, on average, and 12 feet wide. Visual contrasts would be weak to moderate, due to the relative changes in structure dimensions. The visual contrasts of the new, larger 230-kV conductor would also result in weak line contrasts when compared to the existing 115-kV conductor that would be replaced. Figure 3.13-1 shows an existing setting near a residential area in Laramie, Wyoming and a simulation of the proposed project. These types of visual changes would also be seen in areas of both predominantly open space and mixed land uses, including residential, commercial, industrial and public school developments.

Near the City of Cheyenne, visual impacts would also be less than significant due to moderate visual changes in line and form contrasts. From the Happy Jack Substation to the Cheyenne Substation, the proposed project would entail removing both the existing CH-MM and HJ-MM 115-kV H-frame structures and replacing both sets of structures with one new set of new double circuit 230/115-kV single pole steel structures. Overall, the single pole steel structures would be approximately 115 feet tall, compared to 52 feet for the existing H-frame structures, and therefore, would be noticeable by the public. The visual impacts of the increased structure heights would be offset, however, by a reduction in the overall number of structures, as well as the design of the single pole steel structure. Visually, the single pole steel structure design would be more compatible with urban design features (e.g. light poles, distribution lines, etc.), than the two sets

of H-frames that would be replaced. Furthermore, since the proposed project would result in only one set of transmission structures for the CH-MM and HJ-MM transmission lines, rather than the existing two sets, the proposed CH-MM Rebuild Project would result in some beneficial visual effects by reducing the overall number of transmission structures that are currently visible in the Cheyenne area. Some minor increase in line contrasts would also result, due to the replacement of the 115-kV conductor with the slightly larger 230-kV conductor. Overall, these changes would result in weak contrasts, and would not draw viewers attention.

Travel Routes – The long-term visual impacts to local roads, including U.S. and State Routes, as well as public roads providing access to BLM lands, would be slightly adverse and less than significant. Visual changes to roadside views would be similar to those described above for residential areas, and would be most evident when seen within a foreground viewing distance. Visual changes to roadside views would be most evident to interstate travelers along I-80 where the proposed CH-MM rebuild project would pass north of, and parallel to I-80, northwest of Laramie, and where the proposed CH-MM Rebuild Project would cross I-80 near its intersection with I-25 in Cheyenne, Wyoming. A special structure design and increased structure heights may be required at the interstate crossing in Cheyenne, Wyoming to provide adequate clearances. Western anticipates that the maximum height of the structures at this crossing would not exceed 120 feet. These changes would be viewed in the context of numerous existing distribution lines and other transmission lines that converge in this location, however. In addition, Western would implement Standard Construction and Mitigation Practice 34 (Table 2.1-3) to reduce long-term visual contrasts to the extent feasible. Overall, , the degree of visual change would be moderate when viewed in conjunction with other utility (transmission and railroad) corridors, and not significant since the visual change would be less than strong.

In summary, the CH-MM Transmission Line Rebuild would result in less than significant visual/aesthetic impacts. Short-term construction impacts would be less than significant due to the short-term nature of visual effects, and since no new access roads would be constructed in areas requiring landform alterations.

Long-term visual and aesthetic impacts would also be less than significant due to the comparatively minor, or weak changes in line, form, color and texture that the rebuild project would cause.

Transmission System – AU-CH Transmission Line Rebuild

Visual impacts between the Ault and Cheyenne Substations would range from adverse to minor depending on the types of structure modifications proposed. Short-term construction impacts would be adverse, but less than significant due to the short-term nature of visual effects that would result from the presence of construction crews, equipment, and related ground disturbances. Western would also implement Standard Construction and Mitigation Practice 5 (Table 2.1-3) to minimize impacts to landscape character. Long-term visual and aesthetic impacts would be adverse, but less than significant due to the incremental changes in line, form, color and texture that the AU-CH transmission rebuild project would cause, with implementation of Mitigation Practice 34.

There are no public lands or park and recreation areas that would be visually impacted by the AU-CH Rebuild Project. Visual changes would primarily occur to local residents, developing residential areas, and travelers on local roads.

Residential Areas and Communities – The proposed AU-CH Rebuild Project would visually affect views from a number of existing and developing residential subdivisions, including Harmony Point, Harmony, Orchard Valley, Bison Crossing and Winchester. Representative visual changes from the proposed AU-CH Rebuild Project are shown in Figures 3.13-2 and 3.13-3. South of the Cheyenne Substation, Western would replace the existing H-frame structures with new single pole steel structures. The single pole steel structures would be approximately 115 feet tall, compared to the existing H-frames that have typical heights of 52 feet. This change in height would constitute a strong visual contrast where the new structures are openly visible and within a foreground viewing distance. The strong visual contrasts of the new structures would be partially mitigated, however, by the reduction in the overall number of structures that would be required. The existing H-frame structures have typical spans of 700 to 800 feet, compared to 1000 feet for the single pole steel structures. In addition, the single pole steel structure design would also be more visually compatible with community design standards, when compared to the H-frame structures. The single pole steel structures would also be constructed of neutral, non-reflective steel, of a neutral tone compatible with the surrounding residential areas (Mitigation Practice 34, Table 2.1-3). Consequently, on balance, while the increased height of the new structures is considered substantial, overall visual impacts would be adverse, and less than significant, since the number of structures would be reduced and the design would be more visually compatible with developing residential areas.

Substations - Proposed Snowy Range Substation and Miracle Mile, Cheyenne and Ault Substation Modifications

Proposed Snowy Range Substation – The proposed Snowy Range Substation would result in slightly adverse visual impacts. The substation site is located north of Laramie, Wyoming, where the visual landscape character is most influenced by open space rangelands and existing utility corridors. Landscape impacts would be minimal and require little to no changes in overall topography. With respect to viewers, the proposed site lies to the north of developing residential areas of Laramie. Residences are located within .5 mile of the site; however, views from the residential areas are mostly screened to the north by intervening topography. Consequently, no visual impacts are anticipated to these areas from the proposed substation.

Modifications to Existing Miracle Mile, Cheyenne and Ault Substations – Since modifications to the existing Miracle Mile, Cheyenne and Ault Substations would be made within existing Western facilities, no adverse visual impacts would result to scenic quality or sensitive viewers.

3.13.2.3 Impacts of the Alternatives

CH-MM Alternative Route 1

The types of visual changes associated with CH-MM Alternative Route 1 would be similar in degree to the proposed project. Compared to the proposed project, CH-MM Alternative Route 1, Part A routes the proposed 230-kV transmission line along the existing HJ-MM ROW, further to the north of Laramie, Wyoming through open rangelands. This part of the alternative would result in slightly adverse long-term visual impacts since the 230-kV wood H-frame structures would be located along an existing utility corridor and there are few residential or roadside views that would be affected within a foreground viewing distance. Overall, Part A of CH-MM Alternative Route 1 would result in weak visual contrasts in structure design and height compared to the

existing setting. The new 230-kV wood H-frame structures would be approximately 70 feet tall compared to the existing HJ-MM 115-kV structures, which have average heights of 52 feet.

CH-MM Alternative Route 1, Part B would cause long-term visual changes to the existing visual environment between MPs 97 and 99. From MP 91 to 97, the new 115-kV structures would be the same in design, height and material as the existing 115-kV structures which would be removed. The new structures would be wood H-frame in design and have typical heights of 52 feet. Consequently, no long-term visual effects would occur along this segment of the alternative. From MP 97 to 99, new single pole steel 115-kV structures would replace the existing H-frame wood structures. Along this two mile stretch, the design of the structures would change from H-frame to single pole, and the average height of the structures would increase from 52 feet to 82 feet. Materials would change from wood to steel, and the span length between structures would increase from 800 feet to 900 feet on average. The increased height of the single pole 115-kV structures would primarily be seen in industrial and agricultural areas west of Laramie. Visual impacts from the increased height of the single pole steel structures would be mitigated or offset by both the single pole design and the reduction in the total number of structures. Consequently, on balance, this alternative would result in similar or less visual effects than currently occur from the existing 115-kV structures and lines. It should be noted that a special structure design may be required at the U.S. 287 crossing in Laramie, Wyoming to provide adequate clearances. In this area, new single pole steel structures may reach 100 feet in height. Impacts in this area would be adverse, but less than significant. The single pole steel structures would also be constructed of neutral, non-reflective steel, of a neutral tone compatible with the surroundings. The visual contrast would be weak to moderate in this area.

AU-CH Alternative Route 2

The AU-CH Alternative Route 2 would result in similar minor, and less than significant visual impacts as described above for the proposed AU-CH Rebuild Project. The landscape setting and types of visual changes would be similar to the proposed project. Existing viewers in this part of northern Colorado are scarce and consist of several ranch homes.

With Alternative Route 2, the proposed AU-CH 230-kV circuit would be strung on Western's existing Ault-Archer lattice structures, the same as the proposed project. Visual changes associated with this action would be very minor and not visually evident, thus not a significant impact. This alternative would have long-term visual benefits, however, by realigning the existing and future 115-kV H-frame structures adjacent and parallel to the lattice towers. While these visual benefits would not be realized by many existing viewers, the alternative represents good planning and the potential to minimize visual, as well as land use conflicts should development occur in the future.

No Action Alternative

The No Action Alternative would avoid the adverse and beneficial visual impacts described in this section for the proposed project and Alternatives. Existing visual conditions would remain unchanged. This alternative would result in more maintenance activities seen along Western's existing transmission lines, however. Increased short-term visual effects would occur intermittently due to the presence of maintenance crews, vehicles and dust. These activities would not result in long-term moderate or strong visual changes and would be therefore be less than significant.

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3.14 Electrical Effects and Human Health

A significant impact on safety and health as a result of the proposed project would occur if features of the proposed project have demonstrated adverse health effects. Specifically, these would include increased risk of injuries or deaths resulting from potentially higher risk of adverse health symptoms (including those to pacemaker wearers) resulting from increases in electric and magnetic fields in the area.

Current and voltage are required to transmit electrical energy over a transmission line. Current is flow of an electrical charge measured in amperes and is the source of a magnetic field. Voltage represents the potential for an electrical charge to do work expressed in units of volts (V) or kV and is the source of an electrical field. The proposed 230-kV transmission line would provide a maximum thermal capacity of approximately 1,000 amperes in each of the three phase conductors or wires. The electrical effects of the proposed 230-kV transmission line can be characterized as “corona effects” and “field effects” that are associated with current-induced magnetic fields and voltage-induced electrical fields. Magnetic and electrical field profiles for the existing 115-kV transmission lines and the proposed 230-kV and 115/230-kV transmission line designs are provided in Appendix C as a reference for the following discussion.

Corona Effects

Corona is the electrical breakdown of air into charged particles caused by the electrical field at the surface of conductors, insulators, and hardware of energized high-voltage transmission lines. Corona occurs where the field has been enhanced by protrusions, such as nicks, insects, or water drops. During fair weather, these sources are few and corona is minor. During wet weather, sources increase and corona effects are greater. Effects of corona are audible noise, visible light, radio and television interference, and photochemical oxidants.

Audible noise – Corona-generated audible noise is generally characterized as a crackling/hissing noise, most noticeable during wet-weather conditions. There are no design-specific regulations to limit audible noise from transmission lines. Transmission line audible noise is measured and predicted in decibels (A-weighted) or dBA. Some typical noise levels are: light automobile traffic at 100 feet, 50 dBA; an operating air conditioning unit at 20 feet, 60 dBA; and freeway traffic or freight train at 50 feet, 70 dBA. This last level represents the point at which a contribution to hearing impairment begins. The average noise level during wet weather at the edge of the ROW for the proposed line is anticipated to be 46 dBA at 230-kV.

Visible light – Corona is visible as a bluish glow under conditions of darkness, and probably only with the aid of telescopic devices. Light would be difficult to detect at the operating voltage of 230-kV.

Radio and television interference – Corona-generated radio interference is most likely to affect the amplitude modulated (AM) broadcast band; frequency modulated (FM) radio reception is rarely affected. Only AM-radio receivers near transmission lines are affected by radio interference. An acceptable level of maximum fair-weather radio interference at the edge of a ROW is 40 to 45 dBuV/m (decibels above one microvolt per meter). Average levels during foul weather are typically 16 to 22 decibels higher than average fair-weather levels. The predicted fair-weather level for the proposed transmission line rebuild is 36 dBuV/m. Television interference (TVI) due to corona occurs during foul weather and is generally caused by transmission lines with voltage more than 345-kV. The level of corona-operated TVI expected

from the proposed rebuild is 16 dBuV/m at the edge of the ROW. This is a lower level than occurs on many existing lines.

Various techniques exist for eliminating adverse impacts on radio and television reception. Western would address individual complaints concerning radio and television interference as needed.

Corona-generated interference can disrupt communication bands such as the citizen's and mobile bands. However, mobile-radio communications are not susceptible to transmission line interference because they are generally FM. If interference occurs with these types of communications, the same techniques used to alleviate television and radio interference can be used. Shielding, where practicable, would alleviate interference with electronic monitoring equipment.

Photochemical oxidants – When corona is present, the air surrounding the conductors is ionized and many chemical reactions take place, producing small amounts of ozone and other oxidants. Approximately 90 percent of oxidants are ozone and the remainder mainly nitrogen oxides.

The NAAQS for photochemical oxidants, of which ozone is the principal component, is 235 $\mu\text{g}/\text{m}^3$ or 120 parts per billion (ppb). The maximum incremental ozone levels at ground level calculated for the proposed line would be less than 0.02 ppb for a 0.5 miles per hour perpendicular wind and a .03 inch per hour rain.

Field Effects

The electric field created by high voltage transmission lines extends from the energized conductor to other conducting objects. Resulting field effects include induced current and voltage in the ground, structures, vegetation, buildings, vehicles, and people near the transmission line; spark discharge shocks; steady state current shocks; field perception at ground level; and magnetic field. The electric field or voltage gradient is expressed in units of volts per meter (V/m) or kilovolts per meter (kV/m).

For a 230-kV line single-circuit design an electric field of less than 4-kV/m would result at the point of maximum strength within the ROW. This would decrease to 0.07-kV/m at about 200 feet away. There are no federal standards for transmission line electric fields. Several states have set guidelines for electric and magnetic field levels that must be met for newly constructed transmission lines. These levels at the edge of the ROW are about 2 kV/m for electric fields and 200 mG for magnetic fields. In most cases the values are maximum fields that existing lines produce at maximum load-carrying conditions. Montana has established a one-kV/m edge of ROW standard in residential areas. Field levels for the proposed rebuild would be within the recommended limits of these states.

Primary shocks – The greatest hazard from a transmission line is primary shocks or direct electrical contact with the conductors. Primary shocks can result in physical harm. The lowest category of primary shocks is “let go,” which represents the steady-state current that cannot be released voluntarily. The maximum induced current (mA) criterion for vehicles closely approximates the estimated 4.5 mA let-go threshold for 0.5 percent of children (Keesey and Letcher 1969). Caution should be exercised to avoid primary shocks resulting from line strikes with equipment (e.g., drill rigs, farm equipment, electrical service equipment).

Steady-state current shocks – Steady-state currents are those that flow when a person contacts an ungrounded object, providing a path for the induced current to flow to the ground. Potential steady-state-current shocks from vehicles under the proposed line are at or below secondary shock levels. Secondary shocks could cause an involuntary and potentially harmful movement, but cause no direct physiological harm. Steady-state current shocks are infrequent and represent a nuisance rather than a hazard.

Induced current and voltage – When a conducting object, such as a vehicle or person, is placed in an electric field, currents and voltages are induced in that object. The magnitude of the induced current depends on the strength of the electric field and the size and shape of the object. Voltage induction and the creation of currents in long conducting objects, such as fences and pipelines, would be possible near the proposed transmission line. If the object is grounded, the induced current flows into the earth and is called the short-circuit current of the object. In this case, voltage on the object is effectively zero. If the object is insulated (not grounded), then it assumes some voltage relative to ground. These induced currents and voltages represent a potential source of nuisance shocks near a high voltage transmission line. Even under worst case conditions, the short-circuit current resulting from induced voltage of the proposed transmission line to the largest anticipated vehicle would be less than the National Electric Safety Code criterion of 5 mA.

Cardiac pacemakers – Overall risk to cardiac pacemaker wearers as a result of current and voltage induction warrant individual discussion. Induced current and voltage represent a possible source of interference to pacemakers. Internal currents can be caused by electric fields, magnetic fields, or by direct contact.

The interference threshold for the most sensitive pacemaker is estimated at 3.4-kV/m. The maximum induced electrical field of the proposed 230-kV transmission line is estimated at 1.6-kV/m (to be verified by Western). Therefore, the proposed Project, when operated at 230-kV capacity, would not pose a risk to pacemaker wearers.

Spark-discharge shocks – Induced voltage appears on objects that conduct electricity, such as vehicles, fences, and railroad tracks, when there is an inadequate ground. If voltage were sufficiently high, a spark-discharge shock would occur upon contact with the object. This type of shock could occur under the proposed 230-kV transmission line. However, the magnitude of the electric field would be low, and infrequently occur under the line near mid-span.

Carrying or handling conducting objects, such as irrigation pipe, under the proposed line could result in spark discharges that are a nuisance. The primary hazard with irrigation pipe, however, is direct contact with conductors.

Field perception – When the electric field under a transmission line is sufficiently high, persons standing under or near the line may perceive the raising of hair on an upraised hand. At the operating voltage of 230-kV, electric fields from the proposed line should not be detected.

Magnetic field – Magnetic field strength is expressed in terms of teslas or gauss. There are no established limits for magnetic field strength. The proposed 230-kV transmission line, operated at maximum current and thermal capacity, would induce an estimated 60-hertz (Hz) magnetic field maximum of approximately 290 milligauss (mG) (.29 gauss) diminishing to 6 mG about 200 feet away. These magnetic field strengths compare with levels of magnetic field measured near common household appliances, and are much less than the direct current magnetic field of the earth (0.6 gauss). The health effects associated with the upgraded transmission line would be similar to those for the existing line. Since the proposed line design is in keeping with Western's

field-reducing guidelines, any exposures within the ROW would be similar to those expected from typical Western designs. The edge of the ROW would mark the beginning of the long-term residential exposure levels at the root of the present health concern. Since there would be no residences or occupied buildings within the ROW, no such long-term exposures would be expected.

Long-term Exposure to Electric and Magnetic Fields

Questions concerning effects of long-term exposure to electric fields from transmission lines on human health are a controversial subject that has been raised primarily in hearings related to 500-kV and 765-kV transmission lines. These high voltage lines induce electrical fields at ground levels more than twice the maximum electrical field estimated under the proposed 230-kV transmission line. Although available evidence has not established that induced electrical fields pose a significant health hazard to exposed humans, the same evidence does not prove there is no hazard. Therefore, in light of the present uncertainty, it is Western's policy to design and construct transmission lines that reduce the EMF to the maximum extent feasible.

While considerable uncertainty remains about the EMF/health effects issue, the following facts have been established from evaluating the results and trends of EMF-related research:

- Any exposure-related health risks to an exposed individual would be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns have been related to magnetic fields.
- The measures employed for field reduction can affect line safety, reliability, efficiency, and maintainability, depending upon the type and extent of such measures.

No federal regulations have established environmental limits on the strengths of EMF from power lines. Some states have set limits on EMF from newly constructed lines, not based on factual health data. Most of Western's lines would meet those standards.

Below are brief summaries of some past and current studies on EMF health studies:

Electric and Magnetic Fields from 60-Hz Powerlines: What do We Know about Possible Health Risks? Morgan (1989) concluded that 60-Hz EMF do not pose a significant risk to agriculture, animals, or ecosystems.

The Electric Power Research Institute (1998) (along with the Veterans Affairs Medical Center and the Bonneville Power Administration) conducted a four-phase study that exposed sheep to fields from a 500-kV transmission line. The research was done to determine whether long-term EMF exposures impacted melatonin levels, immune function, and animal health. Early phase studies of exposed groups of animals showed no impact on melatonin levels. In later studies, immune cells were monitored in two exposed groups of animals to find out if exposure to fields resulted in immune cells reduction in the exposed animals. Cell reduction would affect immune function and animal health. Final results showed that immune cells were not consistently or significantly reduced in exposed sheep.

A team of Canadian researchers led by McBride reported in the May 1999 issue of the American Journal of Epidemiology that if there is a risk (of childhood leukemia from EMF exposure) it is undetectable through epidemiological studies.

A study sponsored by the National Institute of Health (NIH), National Institute of Environmental Health Sciences (NIEHS) was published in June 1999, *The Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*, stated that all theories concerning biological effects of EMF “suffer from a lack of detailed, quantitative knowledge,” and concluded that laboratory data using a variety of animals, such as non-human primates, pigeons, and rodents, are inadequate to conclude that EMF field exposure alters cancer pattern rate and has not been adequately demonstrated for non-cancer health issues (e.g. birth defects) (NIEHS 1999). As a precaution regarding human health issues, the report recommends that the electrical field at the edge of a ROW measured one meter above ground not exceed 1-kV/m, and considered this recommendation conservative.

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3.15 Cumulative Impacts

Cumulative impacts are those additive or interactive effects that would occur due to the proposed project or alternative's incremental impact when added to other past, present, and reasonable foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. This section of the EA summarizes reasonably foreseeable projects that could be developed within the project area and the proposed project or alternative's potential contribution to cumulative effects that could result. The proposed CH-MM transmission line rebuild would disturb 414 acres, plus 16 acres for the Snowy Range Substation. The AU-CH transmission line rebuild would disturb 87 acres. The total disturbance for the transmission line rebuild is 501 acres most of which would be impacted for the short-term.

3.15.1 Reasonably Foreseeable Development

Table 3.15-1 (at the back of this section) identifies the Reasonably Foreseeable Projects throughout the CH-MM and AU-CH Transmission Line Rebuild project area, and describes the planned projects and their location by county and city. The projects listed are either proposed, approved, or currently under development. The timeframe for the commercial, industrial, and residential projects is within the immediate future, with full built-out occurring within the next few years. The natural resource projects listed may have a longer timeframe due to the need to complete environmental analyses before the projects can be permitted. Many of the natural resource projects listed are in the preliminary planning stages and may take years to permit and be built out. In addition to the transmission line that parallels much of this project, a variety of utility corridors (e.g., gas pipelines, well pads, waterlines, wind generation, other transmission facilities) exist in the area. The number of such facilities is growing, reflecting increased population, and thus the cumulative impacts of these undertakings would likely continue. Increased commercial and residential development is also likely in portions of the project area.

3.15.2 Cumulative Environmental Impacts for Resource Topic

Climate and Air Quality – Because of the nature of the proposed project and alternatives, any contribution of the proposed project to cumulative air quality effects would be minor, localized, and temporary. There is little likelihood of cumulative impacts occurring with other sources of air pollution, and neither the proposed project nor the alternatives would cause or contribute to a violation of any applicable standards. Because the proposed project or alternatives would not affect local climatic conditions there would be no cumulative impacts on climate.

Soils – The proposed project or alternatives would contribute a minor and insignificant amount to cumulative soil disturbances. Since the proposed project or alternatives would require a small amount of disturbance at each structure site, and no new access roads would be built, soil disturbances would be very minor, compared to other types of large-scale utility projects, such as pipelines. In addition, the proposed project or alternatives would entail the restoration of disturbed areas to approximate pre-disturbance conditions. These requirements are firmly bedded in state and federal rules and regulations and land owner and land management agency requirements. The cumulative impact to regional soils from the proposed project or alternatives and potential projects is anticipated to be small when considered in the context of the total project area.

Paleontology – With the application of appropriate mitigation practices (see Table 2.1-3) this project, and other projects planned and executed with similar sensitivity to paleontology, are likely to have only a small cumulative adverse impact on paleontological resources. This and

additional development in the region may result in paleontologic discoveries which would otherwise not occur.

Surface Water – The proposed rebuild project or alternatives would not directly impact surface water and thus no direct cumulative impacts would occur. The project would cause a small incremental increase in the potential for indirect surface water impacts such as stream sedimentation and possible pollution from spills, over and above those impacts expected from coalbed methane development, construction of the EnTrega pipeline, and the smaller county projects. Because the overall disturbance area is small (414 acres) for the CH-MM Transmission Line Rebuild, 87 acres for the AU-CH Transmission Line Rebuild (see Table 2.1-2), and 16 acres permanent disturbance for the proposed Snowy Range Substation and dispersed over 146 miles and 35 miles, respectively, and because Western would use best management practices to avoid surface water pollution, indirect cumulative impacts to surface waters would be minor and of short duration. Operations would not impact surface waters and thus would not cause additional cumulative impacts.

Floodplains and Wetlands – Waters of the U.S. are protected under the *Clean Water Act*; wetlands are defined as waters of the U.S. and many floodplains also meet this definition. The rebuild project or alternatives and each reasonably foreseeable project described above would comply with *Clean Water Act* regulations to protect these areas; therefore, cumulative impacts to floodplains and wetlands would be minimal and of short duration. Operations would not impact floodplains or wetlands and thus would not cause additional cumulative impacts.

Vegetation – The proposed CH-MM and AU-CH transmission line rebuild project or alternatives, in conjunction with the other reasonably foreseeable developments in the project vicinity, would cause the loss of vegetation potentially over large areas (as with the proposed coal mine and coalbed methane projects). The proposed project would contribute a small amount to regional vegetation disturbances (approximate 495 acres temporarily disturbed for the CH-MM and AU-CH transmission line rebuild. Of the total 495 acres disturbed for the transmission line rebuild during construction, less than 1 acre would be permanently disturbed, (plus an additional 16 acres permanent disturbance for the proposed Snowy Range Substation). The project would have a much-reduced impact on total vegetation losses for the life of the project. Vegetation types and associated wildlife habitats that would be impacted are common within the region. Therefore, cumulative impacts would be minor and not significant. Operations would not impact vegetation and thus would not cause additional cumulative impacts.

Wildlife – Cumulative impacts to wildlife would be similar to those described for the proposed project or alternatives. Although impacts from other projects would be widespread and could affect considerable acreage, the proposed project would impact little habitat (495 acres plus an additional 16 acres permanent disturbance for the proposed Snowy Range Substation) and thus contribute little to cumulative impacts. Furthermore, since the project would be constructed in phases, the amount of disturbance and disruption in any one year would be minimal and fairly localized.

Special Status and Sensitive Species – Cumulative impacts to TEP&C and other sensitive species would be similar to those described for the proposed project or alternatives. Although impacts from other projects would be widespread and could affect considerable acreage, each project must be conducted in compliance with the ESA and thus none of the reasonably foreseeable projects is likely to jeopardize the continued existence of any threatened or endangered species, and proposed and candidate species would be protected to the fullest extent possible. Since the larger actions (Anadarko's coal bed methane development and EnTrega's

pipeline) have a federal component including BLM involvement, impacts to BLM-sensitive and WNDD-tracked species would be evaluated, and these species would be afforded the level of protection the federal agencies deem necessary. Since the rebuild project would also be constructed and operated in a way to minimize adverse impacts to TEP&C and other sensitive species, cumulative impacts to these species would be minor to none.

Cultural – Cumulative impacts to cultural resources would be minor since the proposed project or alternatives are within an existing utility ROW. Use of existing utility corridors results in few, if any, new sites with each intervening project. Cumulative impacts are also minimized through implementation of federal laws and regulations to protect historic, prehistoric resources and sites important to Native American heritage.

Land Use and Recreation – The proposed project would make a minor contribution to cumulative land use effects resulting from the reasonably foreseeable future projects shown on Table 3.15-1. Future actions that could impact the land use character of the region to the greatest degree are the Anadarko coalbed methane projects. Impacts from these reasonably foreseeable projects would not likely occur for upwards to 20 years, but if these energy and resource developments are built-out, the project area would change considerably. For the short-term, the proposed reasonably foreseeable projects would not have a dramatic impact on the region. However, the proposed project or alternatives would not change the land use character of the area since the proposed project or alternatives consist of replacing and modifying existing transmission lines within established utility corridors.

The project would provide a reliable source of power that would allow future development to occur; and the availability of adequate power supplies could contribute to growth and development in the region. Most development in rural Carbon County would be resource development that would contribute to the rural character of the project area changing to a more industrial type of landscape. Because of the vast amount of public and private agricultural and range land in Carbon County, Albany, Laramie, and Weld Counties, land use activities and characteristics are likely to remain in spite of the proposed reasonably foreseeable development. The proposed project or alternatives would not directly cause or contribute to the long-term cumulative impacts to land uses.

Socioeconomics and Community Resources – The proposed project or alternatives would make a minor and short-term contribution to the cumulative socioeconomic impacts that would result from construction and operation of other reasonably foreseeable projects listed in Table 3.15-1. Build-out of these projects would contribute to changes in local population, employment, housing, public services and facilities, the economy, and the transportation network. Many of these projects would affect the overall socioeconomic environment of the project area, primarily in the areas of increased population and employment, increased demand for scarce temporary and permanent housing, increased income in the project area, and increased revenues generated particularly in Carbon County, but also in Albany, Laramie, and Weld Counties and the towns of Laramie and Cheyenne. Specific projects that would affect the socioeconomic character of the project area the most are the Anadarko coalbed methane project and the DKRW Energy project coal liquefaction process. These two projects, if developed to full build-out, could spur substantial growth in Carbon County. Most of the projects contributing to reasonably foreseeable cumulative impacts mentioned here have a greater direct impact during the construction phase; however, it is difficult to identify the secondary growth effects related to development of new coalbed methane projects, and induced growth in commercial and residential activity.

Demand for employment could reduce the unemployment rate in the area, the previously sluggish economy would be stimulated, personal income area-wide would increase due to increased employment, direct expenditures from development activity, and indirect expenditures from the employed workforce to the local area businesses, and revenues to local and state government coffers would increase from increased property, income, and sales taxes. In addition to these positive impacts, the potential influx of new population would put extra pressure on an already tight housing market in Carbon County. Certain projects could affect the provision of services by the local governments.

The CH-MM and AU-CH Rebuild Project would have a very minor contribution to these cumulative socio-economic changes since project-related effects would be short-term and occur primarily during project construction in the next 4 to 5 years.

Transportation – During construction, the proposed project would result in short-term and less than significant impacts to local transportation systems including Wyoming State Route 210, U.S. 287/30 and 85 and adjoining local roads. Impacts to transportation systems would result from the intermittent presence of construction crews and vehicles and associated increased traffic. These effects could occur simultaneously with other proposed developments, however. The proposed projects contribution to cumulative impacts is considered short-term, and could be partially mitigated through the coordination with other local agencies regarding construction plans and schedules, particularly in areas where suburban development is occurring in Cheyenne. Over the long-term, the proposed project would not change traffic-related activity throughout the project area.

Visual – The proposed project or alternatives would contribute to regional changes in land use character and related visual quality that would result from the reasonably foreseeable projects outlined in Table 3.15-1. Overall, cumulative visual changes would entail the conversion of natural landscapes to cultural areas of greater industrial and community character. The proposed project's contribution to these regional, long-term aesthetic changes would be very minor and incremental, since Western is proposing to utilize established utility corridors, and upgrade existing facilities. As reasonably foreseeable residential and community projects develop, there would be increased areas of visual sensitivity, due primarily to greater numbers of residents located near the ROW and utility facilities. While visual sensitivity may increase, the project's contribution to cumulative adverse impacts would remain minor compared to the existing conditions.

Table 3.15-1. Reasonably Foreseeable Projects

Project Name	Time frame	Type of Project	Location
<i>Carbon County, WY</i>			
Seminole Road Gas Development Project	2006 (start construction)	1,240 natural gas development on 137,000 acres. 30 year project life.	T21R84 north to T24R86, just west of Seminole Reservoir, 20 miles NE of Rawlins.
Anadarko	2005	Coal bed Methane Pilot Project – 9-16 wells	In vicinity of MP 26 to 28, south approximately 5 miles. Section 2 T23NR81W.
DKRW Energy	2006-2008	Coal fuel conversion Wind generation	15 miles northwest of Medicine Bow. Adjacent to CH-MM transmission line.
Entrega Gas Pipeline	2005	330-mile, 42-inch gas pipeline.	Meeker, CO through Wamsutter, WY to Rockport, CO. Parallels I-80 through Carbon County.
Clipper Wind Power	2004	Wind Turbine	5 miles south of Medicine Bow. T21R79N1/2N1/2S1.
<i>Albany County, WY</i>			
Entrega Pipeline	2005	Same as above	Parallels I-80 through Albany County
Single family	na	Large lot single family parcels for development	9 th St. in county, north of Laramie landfill and CH-MM existing transmission line.
<i>City of Laramie</i>			
Montview Addition	2005	Multi-family housing	7 th St. to 9 th St. south of CH-MM existing line.
Lot Division	2005	Single family lots (2)	No. of 9 th St. past landfill. Roger's Canyon Rd. South of existing CH-MM line.
Mobile Homes	2005	Mobile Homes and commercial development	Just south of Laramie substation.
Single family housing	2005	10 lot single family housing	Thaxton Ct. South of CH-MM existing line.
Single family housing	2005-2006	3 plats, 20 lots	No. 23 rd between Nighthawk and Beaufort. South of existing CH-MM line.
Annexation request	2005		Between N. 23 rd and N. 30 th , south of Beaufort proposed extension. South of existing CH-MM line.
Single Family housing	2005	10-15 lots	No. of N. Inca. South of existing CH-MM line.
University golf course expansion	2006	Golf course	Near 45 th St. South of existing CH-MM transmission line
Elderly housing	2005-2006	Group elderly housing	Inca St., north of Hayford Ave. South of CH-MM existing transmission line.
<i>Laramie County, WY</i>			
Xcel Energy	2005-2006	Renewable Energy	Could include wind turbines near existing wind turbines at Ponnequin, which parallels the existing AU-CH transmission line south of Cheyenne
<i>City of Cheyenne</i>			
St. Brendan's Court Sub	2006	Church (under construction)	No. of Terry Ranch Rd. and So. Of Ashford Dr. Just east of existing AU-CH transmission line
North Range Business Park formerly Veta Tracts	2006	Commercial/Industrial Park (40 tracts)	Corner of I-80 and No. Frontage Rd. Just south of existing CH-MM transmission line
North Range Business Park - West I-80 Business Park replatted	2006	Industrial Park (25 lots) Wal-Mart Distribution center currently under construction	South of Happy Jack Rd. and west of No. Frontage Rd. And SW corner of intersection of Happy Jack and Round Top Rd. Just south of existing CH-MM transmission line.
Laramie County Fire District 1 Station #2	2005-2006	Fire Station (under construction)	North of Terry Ranch Rd., east of Winchester Blvd. Just east of AU-CH transmission line.
Foxhaven Sub	2005	Rural residential	4 miles north of CH-MM transmission line, northwest of Warren AF Base

Table 3.15-1. Reasonably Foreseeable Projects

Project Name	Time frame	Type of Project	Location
Harmony Meadows	200-2006	Residential (190 lots) under construction	SW corner Walterscheid Blvd. and W. Allison. AU-CH transmission line ROW runs through subdivision just south of Cheyenne substation.
Harmony Center	2002	Commercial (19 lots) Approved, but not under construction	No. of West College Dr. west of Walterscheid. AU-CH transmission line ROW runs through subdivision just south of Cheyenne substation.
Triumph Addition	2005-2006	Triumph High School	No. of West College Dr. west of Walterscheid. AU-CH transmission line ROW runs through subdivision just south of Cheyenne substation.
Bison Crossing Sub	2004-2005	Residential- 31 tracts – 2.9 acre/tract	AU-CH transmission line ROW runs through subdivision south of Cheyenne substation.
Overland Trails	2005-2006	Industrial/Commercial	I-25 and SW corner College. 3 miles west of AU-CH transmission line
Harmony Point	2005-2006	Residential	East of Snyder, north of Allison. AU-CH and CH-MM transmission line ROW adjacent to development.
Capitol Tracts	na	Residential (2 tracts)	NW corner York and Hellwig. Just south and west of Cheyenne Sub near AU-CH transmission line.
DS Sub	2005-2007	Residential (3 tracts)	No. of College Dr. between Southwest Dr. and Broken Arrow. Near CH-MM transmission line and intersection of I-25 and I-80.
<i>Weld County, CO</i>			
Recorded Exemption	2004-2005	Residential	Northwest of Ault Substation, near AU-CH transmission line
Single Family housing	2005-2006	Residential – 9 lot prelim. sketch for PUD	East of Ault Substation, near AU-CH transmission line

na – not available